Draft
Removal Action Work Plan
for ERP Site 7 and AOCs J and K

Hayward Air National Guard Station
Hayward, California

January 2005

ANG/CEVR
Andrews AFB, Maryland

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Removal Action Work Plan
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Prepared For:

Air National Guard
Environmental Restoration Program
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and

Department of Toxic Substances Control
Sacramento, California

and

Regional Water Quality Control Board
San Francisco, California

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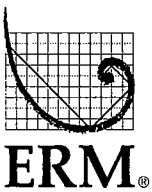

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TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS/ABBREVIATIONS

AFCEE	Air Force Center for Environmental Excellence
ANG	Air National Guard
ANG/CEVR	Air National Guard/Environmental Restoration Program Branch
AOC	Area of concern
ARAR	Applicable or Relevant and Appropriate Requirement
BAAQMD	Bay Area Air Quality Management District
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
Ca-HSC	California Health and Safety Code
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Constituent of concern
DTSC	Department of Toxic Substances Control
ERM	ERM-West, Inc.
ERP	Environmental Restoration Program
ESL	Environmental screening level
HASP	Health and Safety Plan
HEA	Hayward Executive Airport
LUC	Land use control
mg/kg	Milligrams per kilogram
mg/m^3	Milligrams per cubic meter
OSHA	Occupational Safety and Health Administration
PA/SI	Preliminary Assessment/Site Investigation
PAH	Polynuclear aromatic hydrocarbon
PCBs	Polychlorinated biphenyls
PPE	Personal protective equipment
PRG	Preliminary remediation goal
QA/QC	Quality assurance/quality control
RI/FS	Remedial Investigation/Feasibility Study
RAOs	Remedial action objectives
RAW	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SI	Site Investigation
SVOC	Semivolatile organic compound
TBC	To be considered
TPH	Total petroleum hydrocarbons
TPH-D	Total petroleum hydrocarbons as diesel
TSCA	Toxic Substances Control Act
TSP	Total suspended particulates
USEPA	United States Environmental Protection Agency
UST	Underground storage tank

EXECUTIVE SUMMARY

This Draft-Final Removal Action Work Plan (RAW) for the Hayward Air National Guard (ANG) Station in Hayward, California, meets the basic requirements of the Department of Toxic Substances Control's (DTSC) *Removal Action Workplan Memorandum* (DTSC, 1998) and the *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA* (USEPA, 1993), and is in accordance with California Health and Safety Code Sections 25323.1 and 25356.1. This document was developed by the ANG, the DTSC, and the San Francisco Bay Area Regional Water Quality Control Board (RWQCB). The RAW addresses near-surface soils at three sites at the Hayward ANG Station, but does not address surface water or groundwater impacts that may potentially exist at these sites.

This RAW presents the following:

- A summary of site conditions and results of applicable historical soil investigation activities;
- Screening of soil concentrations against RWQCB Region II Environmental Screening Levels (ESLs), and United States Environmental Protection Agency (USEPA) Region IX residential and industrial preliminary remediation goals (PRGs);
- Development of remedial action objectives for protection of human health and the environment;
- Development and screening of remedial action alternatives for the three sites; and
- An implementation plan for the selected remedial alternative.

Due to historical operations, certain site surface soil became impacted with constituents of concern (COCs). This RAW addresses only three of the sites at the Hayward ANG Station: Environmental Restoration Program (ERP) Site 7; Area of Concern (AOC) J; and AOC K. At ERP Site 7, sludge that accumulated in an oil/water separator was spread on the ground, a practice that was discontinued in the late 1970s. As a result of this practice, the COCs present in ERP Site 7 soil include metals, polynuclear aromatic hydrocarbons (PAHs), and petroleum hydrocarbons. Transformers located at AOCs J and K may have leaked heat-dissipating oil. As a result, the COCs present in the soil at these sites

include polychlorinated biphenyls (PCBs) and petroleum hydrocarbons. The laboratory also reported chlordane was found in two samples collected from AOC J. The samples contained chlordane at concentrations less than the screening criteria, but the extent and severity of chlordane contamination are unclear.

Analytical results for COCs identified in soil at the three sites have found concentrations above PRGs and ESLs for residential and industrial soils. The presence of COCs above these screening criteria suggest a potential risk to human health and the environment is present in the surface soil.

The objective of the removal action is to eliminate the potential risk to human health and the environment, and allow for future use of the land. To accomplish this objective, the removal action will remediate soil impacted with COCs. Four remedial alternatives for achieving the removal action objectives were evaluated:

- Remedial Alternative I: No Action;
- Remedial Alternative II-A: Soil Excavation to Industrial PRGs and Off-Site Disposal, with Institutional Controls;
- Remedial Alternative II-B: Soil Excavation to Residential PRGs and ESLs and Off-Site Disposal; and
- Remedial Alternative III: Capping, with Institutional Controls.

Based on a detailed and comparative analysis of the four removal action alternatives with respect to effectiveness, implementability, and cost, Alternative II-B was selected as the preferred removal action alternative. The remedial goals for this alternative are presented in Table 3-1.

The implementation of this remedy includes:

- Excavation of impacted soil to achieve remedial goals, followed by confirmation sampling;
- Profiling of the excavated soil;
- Transportation and off-site disposal of the impacted soil; and
- Site restoration.

SECTION 1.0

INTRODUCTION

The Air National Guard/Environmental Restoration Program Branch (ANG/CEVR), the Department of Toxic Substances Control (DTSC), and the San Francisco Bay Area Regional Water Quality Control Board (RWQCB) have prepared this *Removal Action Work Plan, Soil Remediation, ERP Site 7, and AOCs J and K*, (RAW) for interim remediation of impacted soil at three sites at the Hayward Air National Guard (ANG) Station (Station), in Hayward, California (Figure 1-1).

This RAW has been prepared in accordance with the *Final Air National Guard Installation Restoration Program (IRP) Investigation Protocol* (ANG, 1998), the DTSC's *Removal Action Workplan Memorandum* (DTSC, 1998), the *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA* (United States Environmental Protection Agency [USEPA], 1993), and in accordance with California Health and Safety Code (Ca-HSC) Sections 25323.1 and 25356.1. As required by Ca-HSC Section 25323.1, a detailed engineering plan for conducting the proposed remedial action is included as part of the RAW.

1.1 Project Overview

The Station is at 1525 West Winton Avenue in Hayward, California, approximately 1 mile west of Interstate 880 (Figure 1-1). The Station is bounded by the Hayward Executive Airport (HEA) to the north, West Winton Avenue to the south, a City of Hayward Fire Department station to the east, and various commercial/industrial properties to the west. Sparse residential properties exist south of West Winton Avenue.

The Station consists of numerous buildings that house offices, vehicles, and equipment. Paved parking locations generally surround the buildings, although some areas are not paved. The portion of the Station north and immediately east of Building 1 was formerly used as a parking apron for aircraft. Major features of the Station are shown in Figure 1-2.

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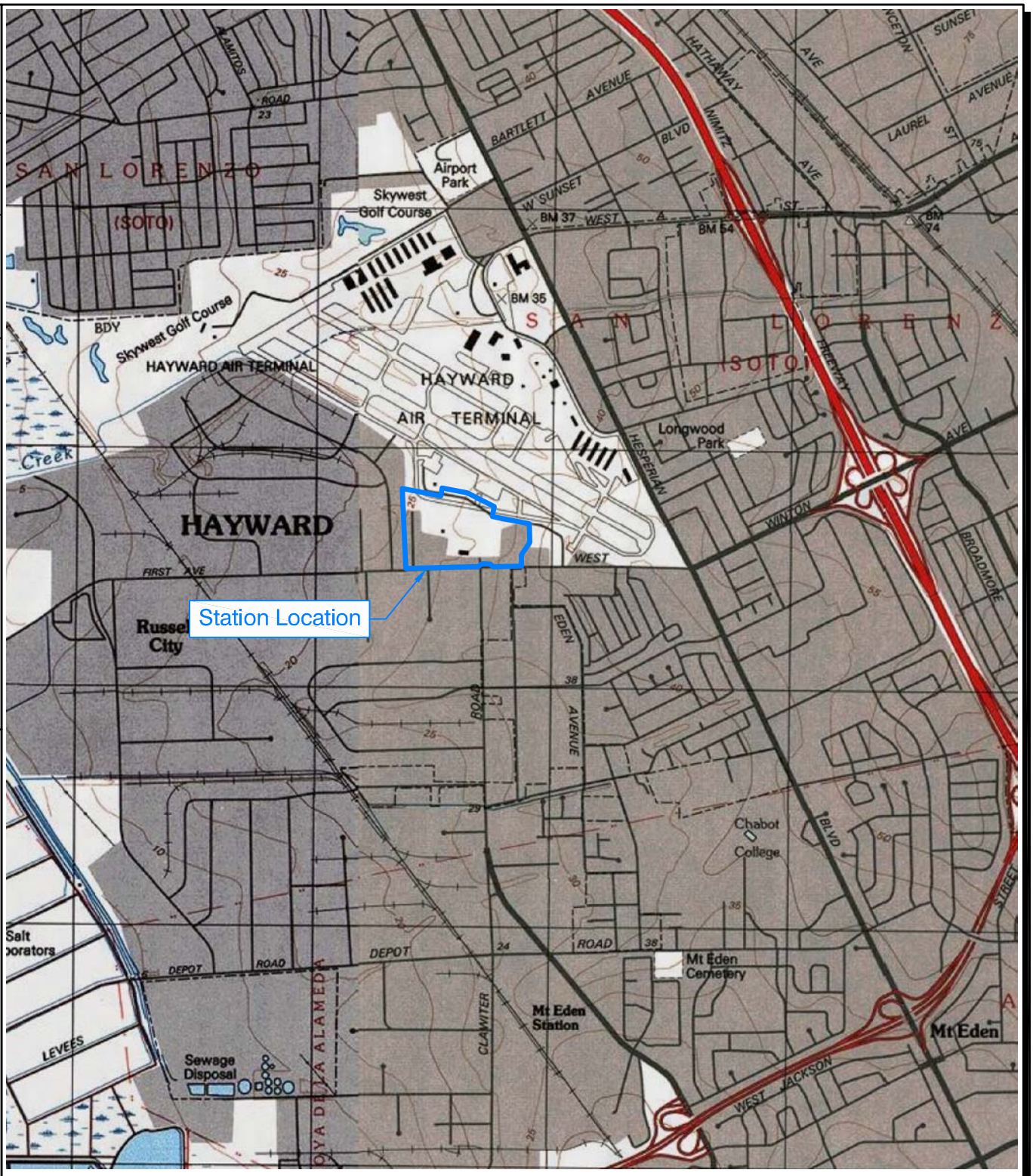

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References:
U.S.G.S. 7.5 Minute Series Quadrangles;
Hayward, California, Dated 1959, Photorevised 1980;
San Leandro, California, Dated 1959, Photorevised 1980

Figure 1-1
Station Location Map
Hayward ANGS
Hayward, California

ERM 07/04

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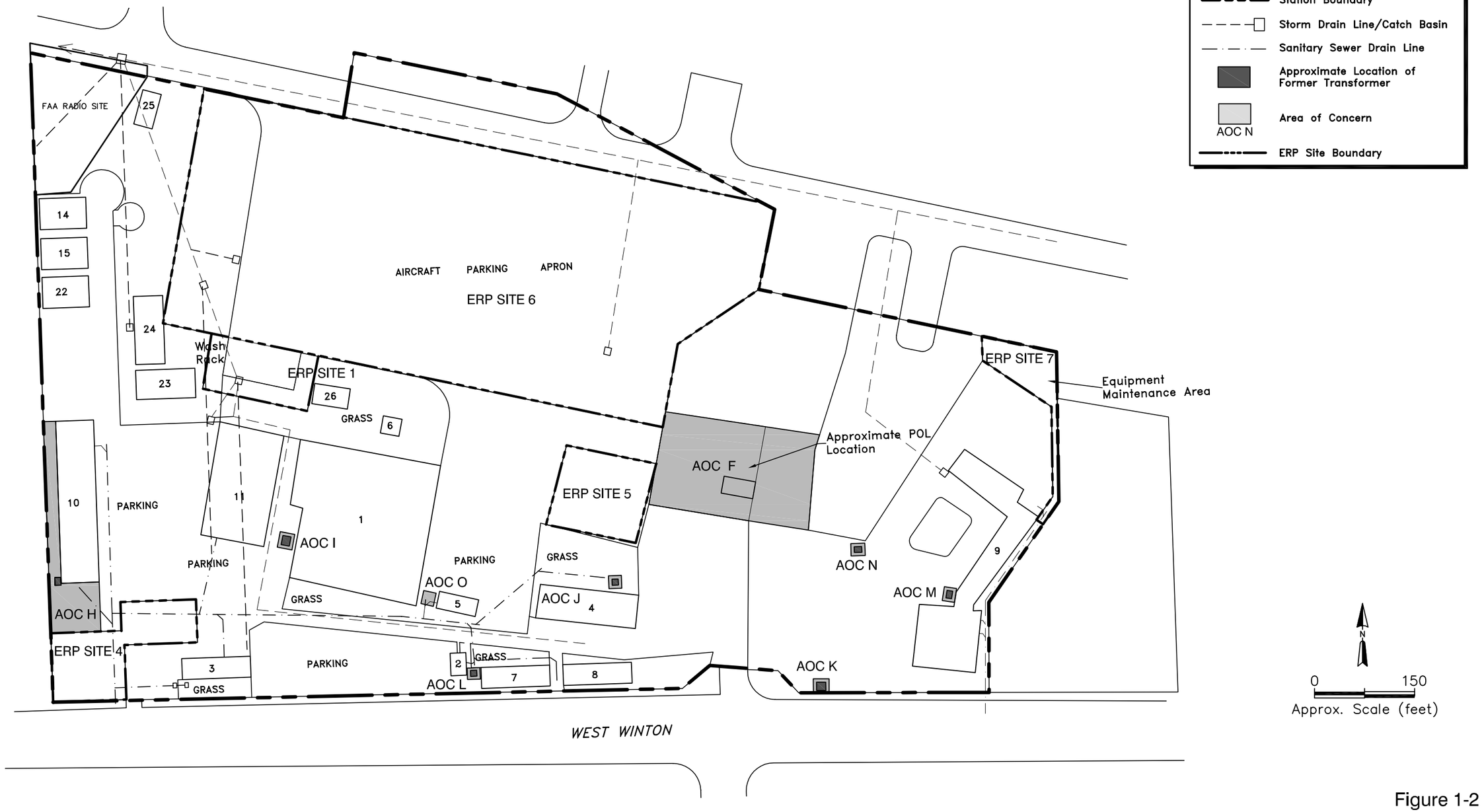

Figure 1-2
Site Map
Hayward ANGS
Hayward, California

ERM 07/04

Due to historical operations, certain site surface soil became impacted with constituents of concern (COCs). At Environmental Restoration Program (ERP) Site 7, sludge that accumulated in an oil/water separator was spread on the ground, a practice that was discontinued in the late 1970s. As a result of this practice, the COCs present in ERP Site 7 soil include metals, polynuclear aromatic hydrocarbons (PAHs), and petroleum hydrocarbons. Transformers located at Areas of Concern (AOCs) J and K may have leaked heat-dissipating oil. As a result, the COCs present in the soil at these sites include polychlorinated biphenyls (PCBs) and petroleum hydrocarbons. Analytical results for soil samples collected from each of the three sites are presented in Section 2.0. Investigations conducted to date indicate that surface soils contain COCs, while deeper site soils (3 and 8 feet) do not appear to be significantly impacted by COCs.

Based on the results of the previous investigations discussed above, this RAW has been prepared to address the presence of total petroleum hydrocarbon (TPH)-, PAH-, and metals-impacted soil at ERP Site 7, as well as TPH- and PCB-impacted soil at AOCs J and K. An investigation of groundwater conditions will be performed as part of the planned remedial investigation.

1.2 Removal Action Process

This RAW was prepared in accordance with Ca-HSC Sections 25323.1 and 25356.1. Essential elements of the RAW are:

- A description of the on-site contamination;
- The goals to be achieved by the removal action; and
- Any alternative removal options that were considered and the basis for subsequent rejection or acceptance.

The purpose of this RAW is to identify and approve an interim cleanup alternative for the three sites that is likely consistent with the final remedy. The RAW was developed to present and evaluate the following:

- Site conditions and results of historical soil investigation activities, including identification of particular chemicals and exposure pathways of concern;

- Remedial Action Objectives (RAOs) developed for media-specific and area-specific protection of human health and the environment;
- Development of appropriate removal action alternatives, and analysis of these alternatives;
- Institutional controls for remedial alternatives that do not include cleanup to unrestricted use;
- A comparison of the alternatives, selection of a preferred alternative, and explanation of the basis for the selection;
- A detailed engineering plan for conducting the removal action; and
- A plan to determine community interest and appropriate action to keep the community informed and to allow for public comment.

The Draft RAW will undergo a 30-day public comment period. Comments on the Draft RAW will be incorporated in the Final RAW and/or addressed in a Responsiveness Summary that will be part of the Final RAW. Implementation of the RAW will occur following DTSC's and RWQCB's approval of the RAW. The sites will be further evaluated during the Remedial Investigation/Feasibility Study (RI/FS) and the Human Health and Ecological Risk Assessment phases; a final remedy will be selected in a Remedial Action Plan. The current project schedule is presented in Figure 1-3. This schedule is tentative and may be modified based on actual progress.

1.3 Document Organization

This RAW is organized into 16 sections and 3 appendices. Sections 2.0 through 6.0 present the results of previous investigations, removal action objectives, and a comparative analysis of the removal action alternatives. Following the selection of the recommended removal action in Section 7.0, the sequencing and the procedures of how the removal action will be performed are presented in sections 8.0 through 15.0. Section 16.0 presents the references used in this RAW. The tables and figures are included following their first reference in the text.

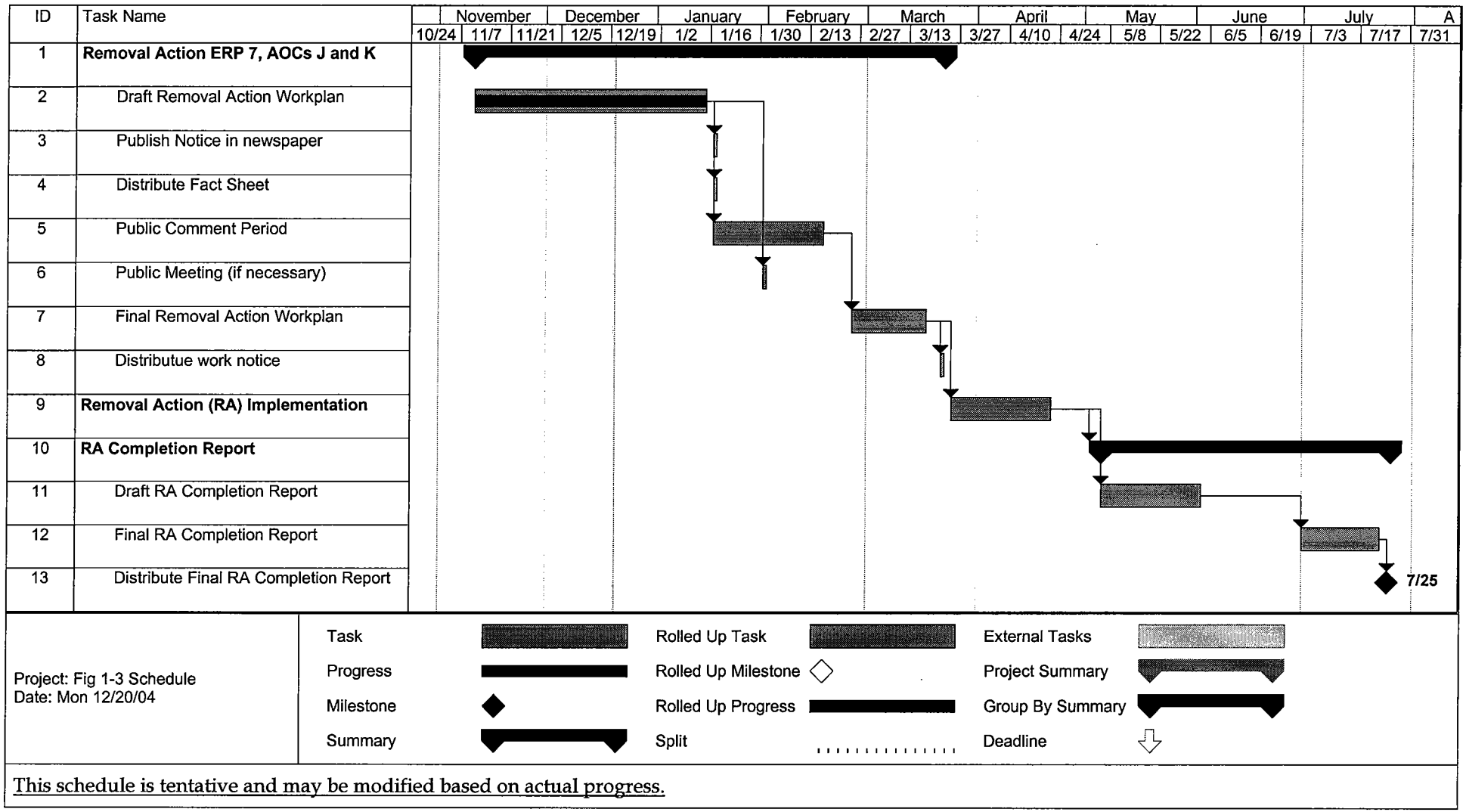

Figure 1-3
Project Schedule
Hayward ANGS
Hayward, California
ERM 12/04

DRAFT

After this introductory section, the RAW is organized as follows:

- Section 2.0 –Characterization Data;
- Section 3.0 – Identification of Removal Action Objectives;
- Section 4.0 – Development of Removal Action Alternatives;
- Section 5.0 – Analysis of Removal Action Alternatives;
- Section 6.0 – Comparative Analysis of Removal Action Alternatives; and
- Section 7.0 – Recommended Removal Action Alternative.

The subsequent sections document the procedures that will be used during implementation of the soil remediation activities as follows:

- Section 8.0 – Organization and Responsibilities;
- Section 9.0 – Construction Management Plan;
- Section 10.0 – Site Preparation Plan;
- Section 11.0 – Excavation Plan;
- Section 12.0 – Materials and Residuals Handling Plan;
- Section 13.0 – Site Restoration Plan;
- Section 14.0 – Foreign Object Damage Plan;
- Section 15.0 – Reporting;
- Section 16.0 – References;
- Appendix A – Spill Prevention Plan;
- Appendix B – Administrative Record; and
- Appendix C – Dumbarton Quarry Associates, Inc. (DQA) letter dated 29 January 2004.

In addition to this RAW, the Sampling and Analysis Plan included as part of the *Final Site Investigation Addendum Work Plan* (ERM, 2002) has already been established for the site and will be used for this remedial action project. A *Health and Safety Plan* (HASP [ERM, 2004b]) has been

developed by ERM to establish the health and safety procedures for site remediation and investigation activities at the Station.

SECTION 2.0

SITE CHARACTERIZATION

This section summarizes the history and existing soil data for the three sites (ERP Site 7 and AOCs J and K) addressed in this RAW. The data are then assessed in a streamlined risk evaluation to identify risks to human health and groundwater at the three sites.

2.1 Land Use History

In 1942, the U.S. Army acquired 727 acres in Hayward for construction of the Hayward Army Airfield. The Hayward Army Airfield was used as a fighter base and auxiliary field for fighters and bombers for the duration of World War II.

In 1946, with wartime activity ceased, the airport was declared surplus by the Federal Government and given to the War Assets Administration for disposal. The Department of the Army transferred a total of 22.17 acres to the Federal Public Housing Authority in 1946 and the War Assets Administration assumed 14.1 acres of perpetual easements. The City of Hayward gained ownership of the 690-acre site and standing buildings through quitclaim deed from the War Assets Administration in 1947. In a lease agreement dated February 1949, the City of Hayward leased 27 acres of the site to the California Air National Guard. The remaining land became the HEA.

There have been several amendments to the lease since that time, including changes in the property that was being leased. One of those amendments resulted in the lease line being changed on the northern edge of ERP Site 7, and another amendment resulted in the lease line being changed on the eastern edge of ERP Site 7. In the event contamination extends beyond the existing lease lines, the contamination will be addressed by the Air Force Center for Environmental Excellence (AFCEE), and/or the ANG.

Historical operations at the Station resulted in the generation of various hazardous materials. These activities included aircraft maintenance, vehicle maintenance, aerospace ground equipment maintenance, and

non-destructive inspection testing. Waste materials generated from these activities include fuels, oils, thinners, paints, lead soldering materials, and solvents.

2.2 Site Characterization Data

The following section summarizes the data gathered during the preliminary assessment/site investigation (PA/SI) and SI addendum investigations. The available information regarding the geologic and hydrogeologic characteristics and the nature and extent of chemicals in soil at these three sites is presented in the *Final Site Investigation Addendum Report* (SI Addendum) (ERM, 2004a).

2.2.1 Screening Criteria

Several screening criteria were used to evaluate the COCs at the three sites. The purpose of the screening process is to determine whether any of the detected chemicals would require further evaluation under actual site-specific conditions.

The preliminary remediation goals (PRGs) developed by the USEPA are human health risk-based chemical concentrations that would not result in adverse health effects when individuals come into contact with these chemicals under either a residential or a commercial/industrial setting. The residential soil PRGs conservatively assume that a resident would come into contact with specific chemicals in the soil through ingestion, skin contact, and inhalation of dust particulates. The residential PRGs also assume that a resident could come into indirect contact with volatile chemicals in the soil through inhalation of vapors that get emitted from the soil. The industrial PRGs assume the same routes of exposure as the residential PRGs, but the individuals are assumed to be exposed under an industrial setting. Therefore, residential PRGs are the lowest acceptable chemical concentrations that would protect an exposed resident from adverse health effects, and industrial PRGs are the lowest acceptable chemical concentrations that would protect an exposed commercial/ industrial worker from adverse health effects. Although residential land use is not an anticipated scenario at this time, the detected chemical concentrations at these three sites were screened against the residential soil PRGs in the event that the future land use were changed to residential.

RWQCB Region II environmental screening levels (ESLs) are screening criteria developed to address environmental protection of the San Francisco Bay Area. The RWQCB considers the ESLs to be conservative; the presence of a chemical in soil at concentrations below the corresponding ESL can be assumed to not pose a significant threat to the environment. RWQCB Region II ESLs were used to evaluate risk to groundwater from COCs detected in soil. The ESL selected was for shallow groundwater (i.e., less than 10 feet deep) where groundwater is a current or potential source of drinking water.

2.2.2 ERP Site 7

Equipment cleaning and maintenance were performed on the northern side of Building 9. The wastewater collection system at this facility includes an oil/water separator to collect fluids used in equipment and vehicle maintenance and cleaning. Oil/water separators are used to separate oils, fuels, sand, and grease from wastewater and to prevent contaminants from entering the sanitary sewer system. After passing through the oil/water separator, treated water is discharged to the sewer system.

Historically, the oily liquids were burned during fire training exercises. Sludge that built up in the oil/water separator was spread on the ground in the area north of Building 9 at the location shown in Figure 1-2. This practice was discontinued in the late 1970s. Presently, contractors dispose of all oil and sludge wastes.

One soil vapor sample (SV-79) and 10 surface soil samples (SB-01 through SB-10) were collected in 2000 within ERP Site 7 (formerly AOC G) at the locations shown in Figure 2-1.

The soil vapor sample was analyzed for volatile organic compounds; benzene, toluene, ethylbenzene, and total xylenes (BTEX); petroleum hydrocarbons; and PAHs. PAHs were the only COCs detected in the soil vapor sample collected in this AOC.

The surface soil samples were analyzed for TPH, semivolatile organic compounds (SVOCs), and priority pollutant metals. The following compounds were reported at concentrations above the screening criteria in one or more of the surface soil samples: TPH as diesel (TPH-D), cadmium, lead, thallium, chrysene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene.

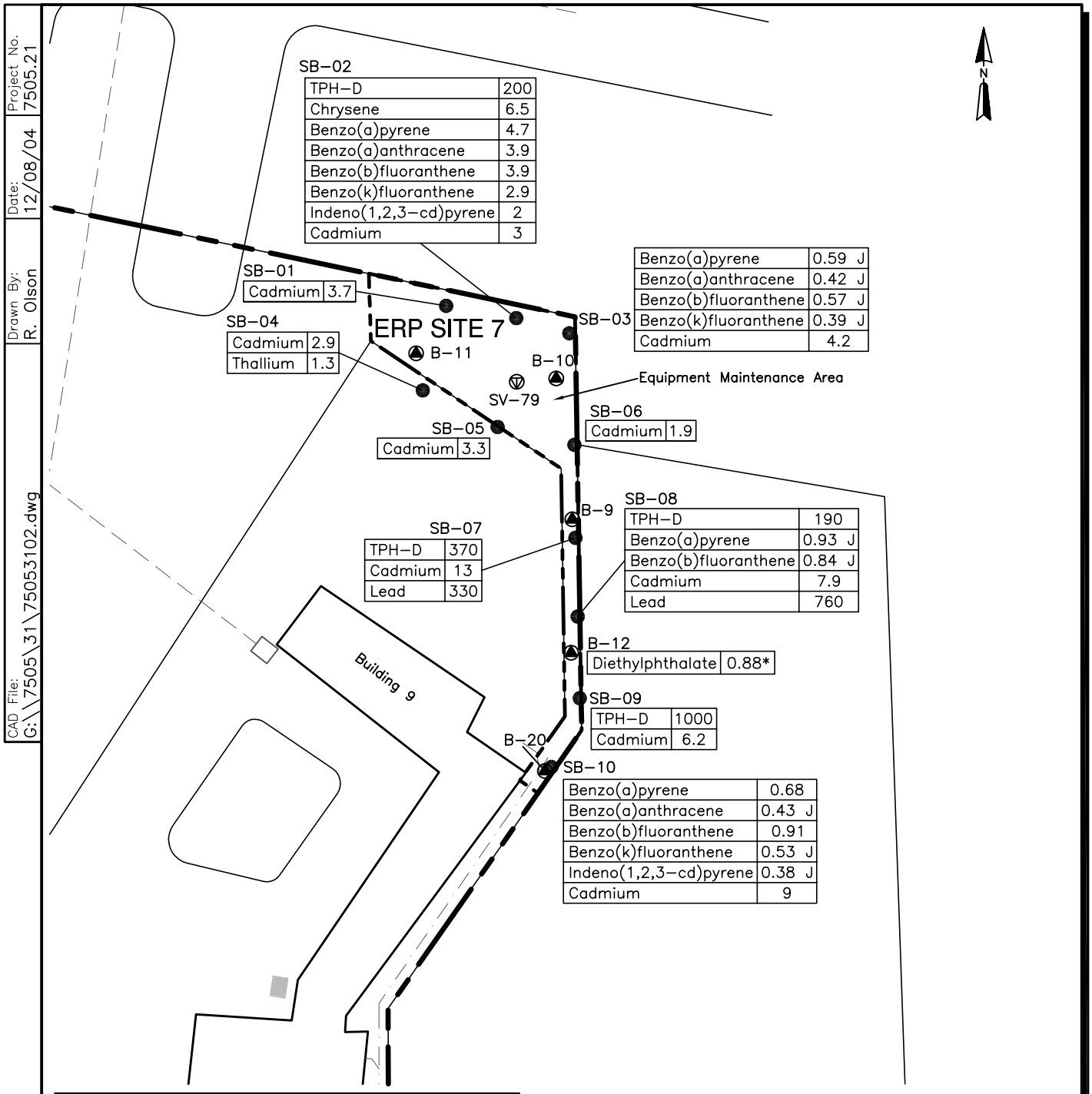

Figure 2-1

Chemical Detections in Soil in Excess of Screening Criteria and Proposed Excavation Limits - ERP Site 7

Hayward ANGS

Hayward, California

ERM 07/04

Sampling locations and results exceeding screening levels are shown in Figure 2-1. Complete analytical results for TPH, SVOCs, and metals are presented in Tables 2-1 through 2-3, respectively.

Five additional soil borings were advanced in 2002 to collect soil samples from 3 and 8 feet below ground surface, as well as screening-level groundwater samples. The samples were analyzed for TPH, SVOCs (including PAHs), and priority pollutant metals. None of the samples contained concentrations of these COCs above screening levels, suggesting that the impacted soil is limited to the upper 3 feet in this area.

2.2.3 Area of Concern J

Based on interview records, a transformer located in AOC J (Figure 1-2) may have leaked. The transformer currently located at AOC J is inactive and does not contain PCBs, as stated on the permanent metal label attached to the transformer by the manufacturer.

In 2000, two soil samples (SB-22 and SB-23) were collected adjacent to the transformer (Figure 2-2) within AOC J and analyzed for TPH and PCBs. PCB Aroclor 1260 was identified at a concentration of 2.1 milligrams per kilogram (mg/kg) in SB-22, which exceeded the Industrial PRG screening level of 0.74 mg/kg (USEPA, 2004) and the residential PRG and ESL of 0.22 mg/kg. The sample locations and the results exceeding screening levels are shown in Figure 2-2. The locations shown for samples SB-22 and SB-23 are considered to be approximate, however, as the sampling locations were not surveyed. Analytical results for samples analyzed for TPH are presented in Table 2-1. Analytical results for samples analyzed for PCBs are presented in Table 2-4.

In 2002, three soil borings (B-29, B-30, and B-31) were installed, and samples were collected at the surface and at depths of 3 and 8 feet. The samples were analyzed for PCBs. PCBs were detected at concentrations of 0.18 mg/kg and 0.13 mg/kg in surface soil samples B-29-0.5 and B-31-0.5, respectively. These concentrations are below the applicable screening levels. As part of the laboratory analysis for PCBs, chlordane was also detected in two samples at concentrations of 0.86 and 0.06 mg/kg. Chlordane was not detected at concentrations greater than the screening criteria.

Table 2-1

Total Petroleum Hydrocarbons in Soil Samples
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Sample Name	Location	Date Collected	TPH-G	TPH-D
Reuse criteria		**--**		**1000**
B-9-3	ERP 7	10/7/2002	<2.5	**1.1 NJ**
B-9-8	ERP 7	10/7/2002	<2.5	**7.4 NJ**
B-10-3	ERP 7	10/7/2002	<2.5	**1.9 NJ**
B-10-8	ERP 7	10/7/2002	<2.5	<1
B-11-3	ERP 7	10/7/2002	<2.5	<1
B-11-8	ERP 7	10/8/2002	<2.5	**1.9 NJ**
B-12-3	ERP 7	10/8/2002	<2.5	**2.3 UNJ**
B-12-8	ERP 7	10/8/2002	<2.5	**6.6 UNJ**
B-20-3	ERP 7	10/8/2002	<2.5	**2.1 UNJ**
B-20-3D	ERP 7	10/8/2002	<2.5	**1.8 UNJ**
B-20-8	ERP 7	10/8/2002	<2.5	<1
SB-01	ERP 7	8/8/2000	NS	**82**
SB-02	ERP 7	8/8/2000	NS	**200**
SB-03	ERP 7	8/8/2000	NS	**71**
SB-04	ERP 7	8/8/2000	NS	**1.6**
SB-05	ERP 7	8/8/2000	NS	**22**
SB-06	ERP 7	8/8/2000	NS	**10**
SB-07	ERP 7	8/8/2000	NS	**370**
SB-08	ERP 7	8/8/2000	NS	**190**
SB-09	ERP 7	8/8/2000	NS	**1,000**
SB-10	ERP 7	8/8/2000	NS	**51**
SB-22	Area J	8/10/2000	NS	**28**
SB-23	Area J	8/10/2000	NS	**52**
SB-24	Area K	8/9/2000	NS	**19**
SB-25	Area K	8/9/2000	NS	**2,900**

Notes & Key:

Concentrations reported in milligrams per kilogram (mg/kg)
Chemical concentrations in excess of the Method Detection Limit are presented in bold.
Chemical concentrations equal to or greater than the ESL are boxed.
Reuse criteria = Regional Water Quality Control Board reuse number for heavy fraction TPH in soil
J = Estimated value
NJ = Estimated value - chromatogram did not resemble the standard hydrocarbon pattern
NS = Not sampled
SB = Soil boring sample
TPH-D = Total petroleum hydrocarbons as diesel
TPH-G = Total petroleum hydrocarbons as gasoline
U = Nondetected, estimated report limit
< = Less than; compound not detected at the Method Detection Limit

Table 2-2

Semivolatile Organic Compounds in Soil Samples
Detections Only
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Sample Name	Location	Date Collected	Anthracene	Benzo(a)-anthracene	Benzo(a)pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Bis(2-ethylhexyl)-phthalate	Chrysene	Diethylphthalate	Di-n-butyl-phthalate	Di-n-octyl-phthalate	Fluoranthene	Indeno(1,2,3-cd)-pyrene	Isophorone	Phenanthrene	Pyrene
Industrial PRG*	--	--	**100,000**	**2.1**	**0.21**	**2.1**	**NE**	**1.3***	**120**	**13***	**100,000**	**62,000**	**25,000**	**22,000**	**2.1**	**1,800**	**NE**	**29,000**
Residential PRG*	--	--	**22,000**	**0.62**	**0.062**	**0.62**	**NE**	**0.38***	**35**	**3.8***	**49,000**	**6,100**	**2,400**	**2,300**	**0.62**	**510**	**NE**	**2,300**
ESL	--	--	**2.8**	**0.38**	**0.038**	**0.38**	**27**	**0.38**	**66**	**3.8**	**0.035**	**--**	**--**	**40**	**0.38**	**NE**	**11**	**85**
B-9-3	ERP 7	10/7/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-9-8	ERP 7	10/7/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-10-3	ERP 7	10/7/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-10-8	ERP 7	10/7/2002	<0.33	<0.33 R	<0.33 R	<0.33 R	<0.33 R	<0.33 R	<0.33	<0.33 R	<0.33 R	<0.33	<0.33	<0.33 R	<0.33 R	<0.33 R	<0.33 R	<0.33 R
B-11-3	ERP 7	10/7/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-11-8	ERP 7	10/7/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-12-3	ERP 7	10/8/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-12-8	ERP 7	10/8/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	**0.88 U**	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-20-3	ERP 7	10/8/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-20-3D	ERP 7	10/8/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
B-20-8	ERP 7	10/8/2002	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
SB-01	ERP 7	8/8/2000	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	**1.2 J**	<1.7	<1.7	<1.7	**2**	<1.7	<1.7	**1.2 J**	**2**
SB-02	ERP 7	8/8/2000	**0.95 J**	**3.9**	**4.7**	**3.9**	**1.8**	**2.9**	<1.7	**6.5**	<1.7	<1.7	<1.7	**9.7**	**2**	<1.7	**7.2**	**10**
SB-03	ERP 7	8/8/2000	<0.67	**0.42 J**	**0.59 J**	**0.57 J**	<0.67	**0.39 J**	<0.67	**0.9**	<0.67	<0.67	<0.67	**1.4**	<0.67	<0.67	**0.85**	**1.4**
SB-04	ERP 7	8/8/2000	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
SB-05	ERP 7	8/8/2000	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
SB-06	ERP 7	8/8/2000	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
SB-07	ERP 7	8/8/2000	<0.67	<0.67	<0.67	<0.67	<0.67	**0.35 J**	<0.67	**0.48 J**	<0.67	<0.67	<0.67	**0.78**	<0.67	<0.67	**0.51 J**	**0.69**
SB-08	ERP 7	8/8/2000	<1.7	<1.7	**0.93 J**	**0.84 J**	<1.7	<1.7	<1.7	**1.5 J**	<1.7	<1.7	<1.7	**2.5**	<1.7	<1.7	**1.7 J**	**2.8**
SB-09	ERP 7	8/8/2000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
SB-10	ERP 7	8/8/2000	<0.66	**0.43 J**	**0.68**	**0.91**	**0.39 J**	**0.53 J**	**0.99**	**1**	<0.66	<0.66	<0.66	**1.6**	**0.38 J**	<0.66	**0.87**	**1.4**

Notes & Key:

Concentrations reported in milligrams per kilogram (mg/kg).
Chemical concentrations in excess of the Method Detection Limit are presented in bold.
Chemical concentrations equal to or greater than the Residential PRG screening criteria are shaded.
Chemical concentrations equal to or greater than the ESL are boxed.
Only those compounds detected in at least one sample are presented in this table.
* = For compounds that have a California Modified PRG, this value is used.
< = Less than; compound not detected at the Method Detection Limit
ESL = Environmental Screening Level, for the following conditions: surface soil; residential land use; and groundwater is a potential drinking water source
PRG = Preliminary Remediation Goal, 2004
NA = Not applicable
NE = Not established
J = Estimated value
U = Nondetected
R = Nondetected compounds are rejected
UJ = Nondetected, estimated report limit
SB = Soil boring sample
SD = Storm drain sample

The following compounds were analyzed for, but not detected:
† = Compound was only analyzed for in 2000.
†† = Compound was only analyzed for in 2002.

1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnaphthalene
2-Methylphenol
2-Nitroaniline
2-Nitrophenol
3,3'-Dichlorobenzidine
3-,4-Methylphenol †
3-Nitroaniline
4,6-Dinitro-2-methylphenol
4-Bromophenyl Phenyl Ether
4-Chloro-3-methylphenol
4-Chloroaniline
4-Chlorophenyl-phenylether
4-Methylphenol ††
4-Nitroaniline
4-Nitrophenol
Acenaphthene
Acenaphthylene
Aniline ††
Azobenzene
Benzidine ††
Benzoic Acid
Benzyl Alcohol
bis(2-Chloroethoxy)methane
bis(2-Chloroethyl)ether
bis(2-Chloroisopropyl)ether
Butylbenzylphthalate
Dibenz(a,h)anthracene
Dibenzofuran
Dimethylphthalate
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Naphthalene
Nitrobenzene
NMP ††
N-Nitrosodimethylamine
n-Nitroso-di-n-propylamine
n-Nitrosodiphenylamine
Pentachlorophenol
Phenol
Pyridine ††

Table 2-3

Metals in Soil Samples
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Sample Name	Location	Date Collected	Antimony	Arsenic*	Beryllium	Cadmium	Chromium (T)	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
Industrial PRG	--	--	**410**	**0.06****	**1,900**	**450**	**450**	**41,000**	**800**	**310**	**20,000**	**5,100**	**5,100**	**67**	**100,000**
Residential PRG**	--	--	**31**	**0.25****	**150**	**37**	**210**	**3,100**	**150****	**23**	**1,600**	**390**	**390**	**5.2**	**23,000**
ESL	--	--	**6.3**	**5.5**	**4**	**1.7**	**58**	**230**	**200**	**2.5**	**150**	**10**	**20**	**1**	**600**
B-9-3	ERP 7	10/7/2002	<25	<5	<5	<5	**43**	**21**	**9.6**	<0.05	**52**	<25	<5	<25	**52**
B-9-8	ERP 7	10/7/2002	<25	<5	<5	<5	**40**	**15**	**7.0**	<0.05	**48**	<25	<5	<25	**43**
B-10-3	ERP 7	10/7/2002	<25	<5	<5	<5	**45**	**19**	**7.3**	<0.05	**51**	<25	<5	<25	**51**
B-10-8	ERP 7	10/7/2002	<25	<5	<5	<5	**26**	**11**	<5	<0.05	**36**	<25	<5	<25	**37**
B-11-3	ERP 7	10/7/2002	<25	<5	<5	<5	**43**	**20**	**8.5**	<0.05	**50**	<25	<5	<25	**48**
B-11-8	ERP 7	10/7/2002	<25	<5	<5	<5	**41**	**18**	**9.5**	<0.05	**51**	<25	<5	<25	**51**
B-12-3	ERP 7	10/8/2002	<25	<5	<5	<5	**38**	**20**	**11**	<0.05	**44**	<25	<5	<25	**68**
B-12-8	ERP 7	10/8/2002	<25	<5	<5	<5	**30**	**14**	**12**	<0.05	**37**	<25	<5	<25	**58**
B-20-3	ERP 7	10/8/2002	<25	<5	<5	<5	**35**	**76**	**12**	**0.3139**	**40**	<25	<5	<25	**79**
B-20-3D	ERP 7	10/8/2002	<25	<5	<5	<5	**54**	**100**	**13**	**0.1162**	**46**	<25	<5	<25	**81**
B-20-8	ERP 7	10/8/2002	<25	<5	<5	<5	**44**	**38**	**13**	<0.05	**51**	<25	<5	<25	**88**
SB-01	ERP 7	8/8/2000	<2.9	**4.1**	**0.31**	**3.7**	**30**	**38**	**58**	**0.77**	**36**	**0.25**	<0.25	**0.74**	**67**
SB-02	ERP 7	8/8/2000	<2.9	**4.9**	**0.35**	**3**	**42**	**37**	**89**	**0.099**	**43**	<0.24	<0.24	**0.41**	**45**
SB-03	ERP 7	8/8/2000	<2.9	**3.3**	**0.25**	**4.2**	**18**	**40**	**50**	**0.97**	**28**	<0.24	<0.24	**0.97**	**60**
SB-04	ERP 7	8/8/2000	<3	**1.7**	**0.18**	**2.9**	**8**	**36**	**1.3**	**0.92**	**17**	<0.25	<0.25	**1.3**	**36**
SB-05	ERP 7	8/8/2000	<3	**3.1**	**0.22**	**3.3**	**14**	**39**	**50**	**1.4**	**25**	<0.25	<0.25	**0.92**	**53**
SB-06	ERP 7	8/8/2000	<2.9	**5.1**	**0.4**	**1.9**	**34**	**24**	**12**	**0.05**	**39**	<0.24	<0.24	**0.41**	**33**
SB-07	ERP 7	8/8/2000	<2.9	**5.3**	**0.27**	**13**	**52**	**68**	**330**	**0.54**	**41**	**0.25**	<0.24	**0.49**	**370**
SB-08	ERP 7	8/8/2000	<3	**5.5**	**0.31**	**7.9**	**50**	**45**	**760**	**0.49**	**40**	**0.25**	<0.25	**0.65**	**320**
SB-09	ERP 7	8/8/2000	<2.9	**4.8**	**0.32**	**6.2**	**36**	**46**	**100**	**0.11**	**41**	<0.24	<0.24	**0.59**	**170**
SB-10	ERP 7	8/8/2000	<2.9	**3.8**	**0.35**	**9**	**34**	**32**	**52**	**0.21**	**41**	**0.28**	<0.24	**0.62**	**110**

Notes & Key:

Concentrations reported in milligrams per kilogram (mg/kg).
Chemical concentrations in excess of the Method Detection Limit are presented in bold.
Chemical concentrations equal to or greater than the Residential PRG are shaded.
Chemical concentrations equal to or greater than the ESL are boxed.
* = As shown in the table, the concentrations of arsenic detected in soil samples exceeded the residential and industrial PRGs. However, the arsenic concentrations detected at the Station are believed to be indicative of background concentrations. Therefore, they are not boxed or shaded in the table.
** = For compounds that have a California Modified PRG, this value is used
< = Less than; compound not detected at the Method Detection Limit
D = Duplicate sample
ESL = Environmental Screening Level, for the following conditions: surface soil; residential land use; and groundwater is a potential drinking water source
PRG = Preliminary Remediation Goal, 2004
Chromium (T) = Samples analyzed for total chromium
SB = Soil boring sample
SD = Storm drain sample

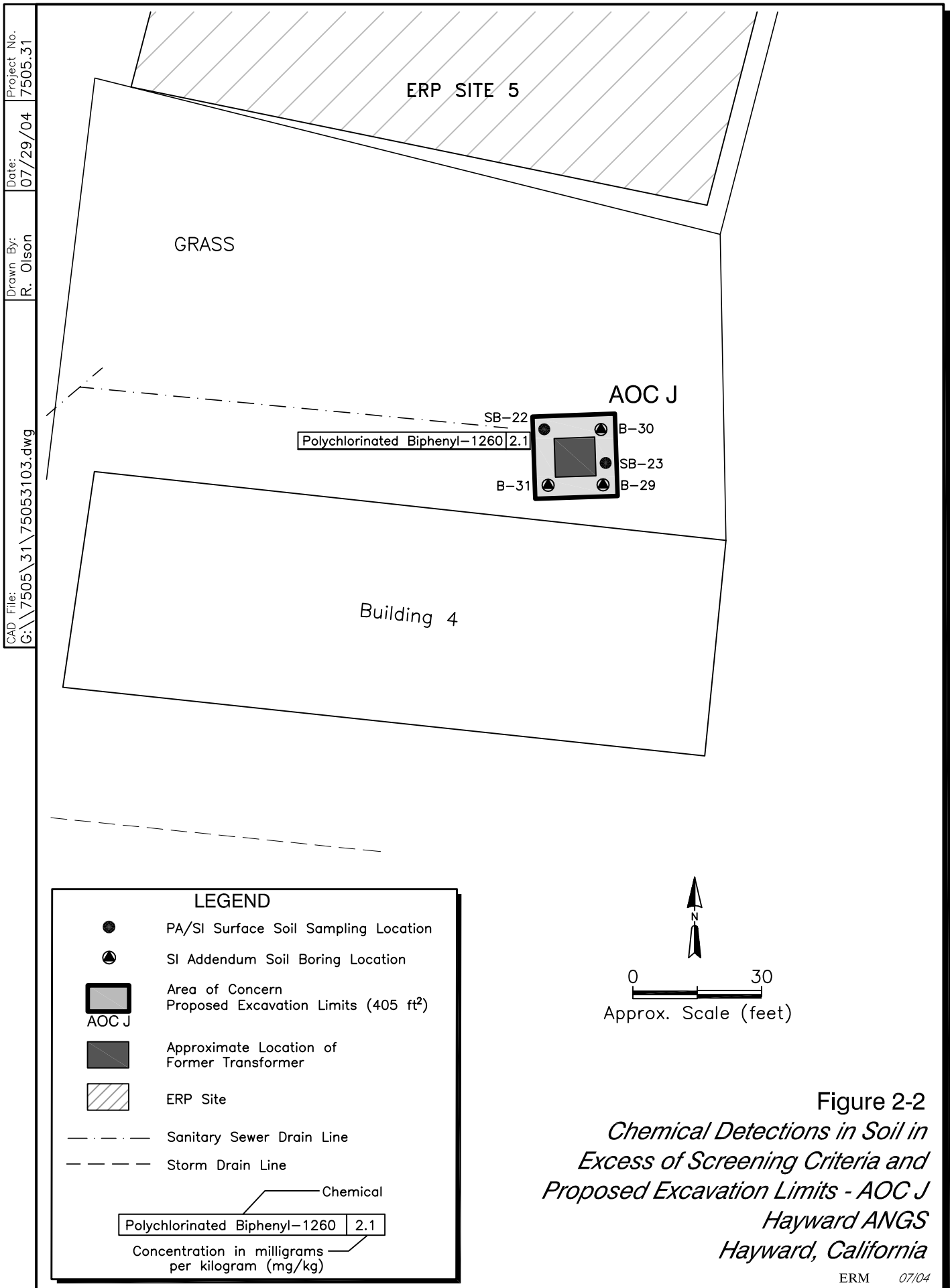

Figure 2-2
Chemical Detections in Soil in Excess of Screening Criteria and Proposed Excavation Limits - AOC J
Hayward ANGS
Hayward, California

ERM *07/04*

Table 2-4

Polychlorinated Biphenyls in Soil Samples
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Sample Name	Location	Date Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268
Industrial PRGs	**--**	**--**	**21**	**0.74**	**0.74**	**0.74**	**0.74**	**0.74**	**0.74**	**0.74**	**0.74**
Residential PRGs	**--**	**--**	**3.9**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**
ESL	**--**	**--**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**	**0.22**
B-29-0.5	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.18 (1) J**	<0.1	<0.1
B-29-0.5D	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-29-3	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-29-8	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-30-0.5	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-30-3	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-30-8	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-31-0.5	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.13 (2) J**	<0.1	<0.1
B-31-3	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-31-8	Area J	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB-22	Area J	8/10/2000	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	**2.1**	NS	NS
SB-23	Area J	8/10/2000	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	NS	NS
B-26-0.5	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-26-3	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-26-8	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-27-0.5	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-27-3	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-27-8	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-28-0.5	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-28-3	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B-28-8	Area K	10/9/2002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB-24	Area K	8/9/2000	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	NS	NS
SB-25	Area K	8/9/2000	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	**0.36**	NS	NS

Notes & Key:

Concentrations reported in milligrams per kilogram (mg/kg).
Chemical concentrations in excess of the Method Detection Limit are presented in bold.
Chemical concentrations equal to or greater than the Residential PRG are shaded.
Chemical concentrations equal to or greater than the ESL are boxed.
< = Less than; compound not detected at the Method Detection Limit
J = Estimated value
PRG = Preliminary Remediation Goal, 2004
ESL = Environmental Screening Level (ESL), for the following conditions: surface soil; residential land use and groundwater is a potential drinking water source
NS = Not sampled
SB = Soil boring sample
Laboratory notes:
(1) While Aroclor 1260 is present, a second compound (chlordane - 0.862 mg/kg) carries into the Aroclor 1260 quantitation range which may result in a slightly elevated final Aroclor 1260 reported concentration.
(2) While Aroclor 1260 is present, a second compound (chlordane - 0.064 mg/kg) carries into the Aroclor 1260 quantitation range which may result in a slightly elevated final Aroclor 1260 reported concentration.

2.2.4 Area of Concern K

An active transformer is located in AOC K.

In 2000, two soil samples (SB-24 and SB-25) were collected within AOC K and analyzed for TPH-D and PCBs (Figure 2-3). TPH was detected at concentrations of 19 and 2,900 mg/kg in samples SB-24 and SB-25, respectively. The concentration detected at SB-25 exceeds the reuse criterion of 1,000 mg/kg and the ESL of 100 mg/kg. PCB Aroclor 1260 was also detected at a concentration of 0.36 mg/kg in sample SB-25. This concentration is less than the industrial PRG of 0.74 mg/kg, but greater than the residential PRG and the ESL of 0.22 mg/kg. The sample locations and the results exceeding screening levels are shown in Figure 2-3. Analytical results for samples analyzed for TPH are presented in Table 2-1. Analytical results for samples analyzed for PCBs are presented in Table 2-4.

In 2002, three soil borings (B-26, B-27, and B-28) were installed and samples were collected at the surface and at depths of 3 and 8 feet. The samples were analyzed for PCBs. No PCBs were detected in the samples.

2.3 Streamlined Risk Evaluation

This RAW proposes certain response actions to address soil containing COCs at concentrations above risk-based screening levels. Screening criteria were used to identify COCs in soils as a means of indicating risk for the current and unrestricted land uses. This streamlined risk evaluation differs from a conventional baseline risk assessment conducted during a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) RI/FS in that it relies on remediation goals (i.e., USEPA PRGs and RWQCB ESLs) that were developed for a generic site, rather than an analysis that takes into consideration site-specific conditions. The streamlined risk evaluation is limited to the sites that are the subject of this removal action.

2.3.1 Potential Exposure to Chemicals in Soil

The individuals likely to be exposed to COCs in soil at the three sites include industrial site workers and construction workers. It is possible that site access controls may be removed or reduced at some point in the

future. In this case, it is possible that pedestrians or other non-site

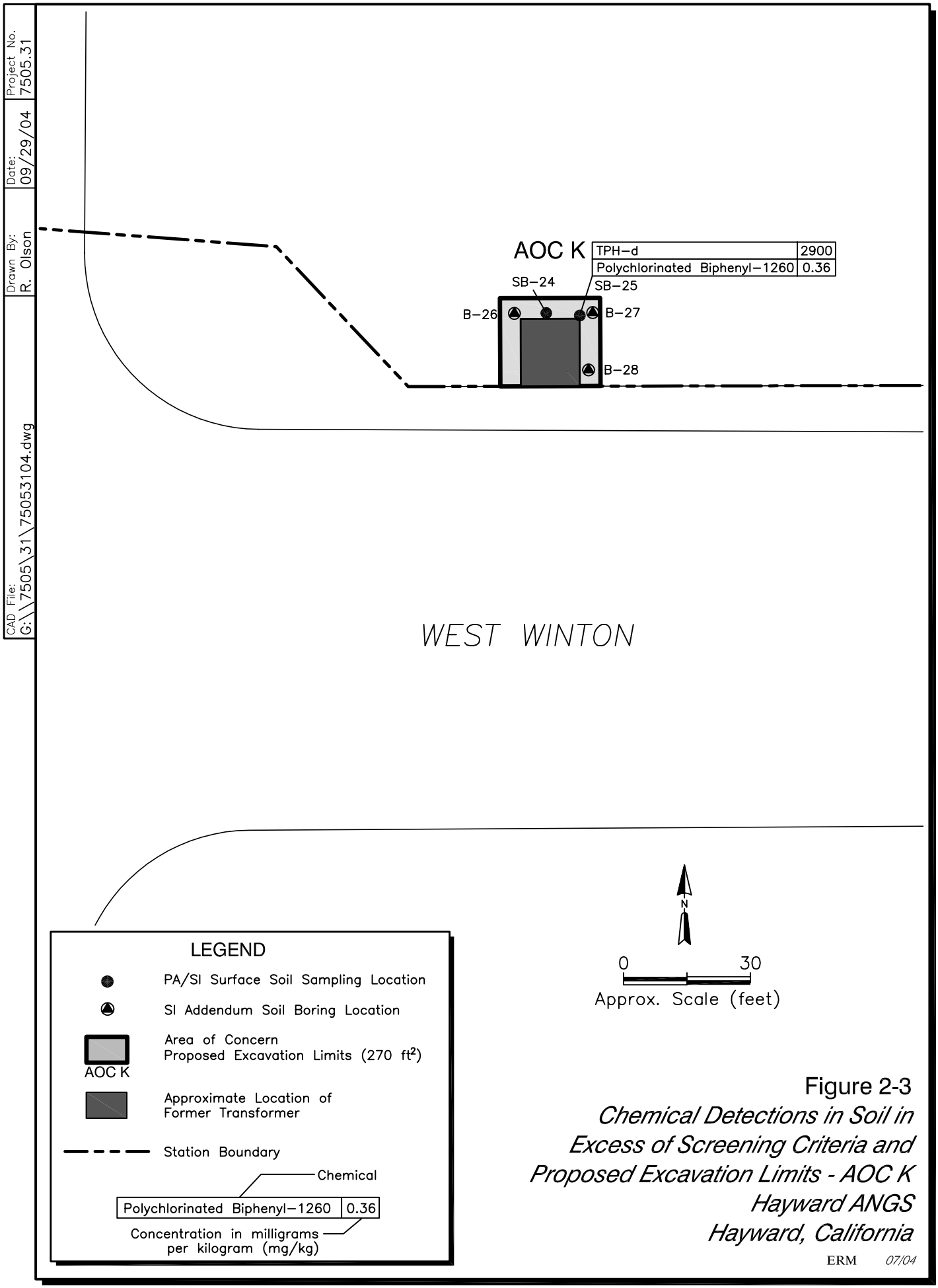

Figure 2-3
Chemical Detections in Soil in Excess of Screening Criteria and Proposed Excavation Limits - AOC K
Hayward ANGS
Hayward, California

ERM 07/04

workers could be exposed to COCs in the soil. Given the current land use and proximity to an active airport, residential land use is not an anticipated scenario at this time. Even so, the residential scenario is analyzed below to address the potential risk in the event the land use is changed to residential in the future.

2.3.1.1 Human Health Risk Evaluation, Industrial Scenario

As described in Section 2.2.1, PRGs were derived by USEPA using residential or industrial land-use assumptions. Under the industrial land-use scenario, adult workers are assumed to be routinely exposed to contaminated soil within a commercial area or industrial site. The routes of exposure for individuals potentially exposed to COCs in the soil include dermal absorption, inhalation of dust, and incidental ingestion of soil.

Since the Hayward ANG Station is in an industrial area where redevelopment for homes is not feasible now or in the foreseeable future, the risk evaluation criterion that fits closest to the human exposure scenario described above is the USEPA Region IX PRGs for an industrial site worker (USEPA, 2004). Comparison of this screening level with the reported concentrations of COCs indicates compounds at the following sites present potential health risks to industrial workers:

- ERP Site 7: Benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, benzo(k)fluoranthene, and lead.
- AOC J: PCB Aroclor 1260; and
- AOC K: No compounds exceeded the industrial criteria.

2.3.1.2 Human Health Risk Evaluation, Residential Scenario

Although the Hayward ANG Station is in an industrial area where residential land use is not a current or anticipated land use, there are currently no restrictions preventing this scenario in the future. Under the residential land-use scenario, future residents are expected to be in frequent, repeated contact with contaminated soil over a longer time period than in the industrial scenario. The assumptions in this scenario account for daily exposure over the long term and generally result in the highest potential exposures and risk. The routes of exposure for

individuals potentially exposed to COCs in the soil include dermal absorption, inhalation of dust, and incidental ingestion of soil.

Comparison of these screening criteria with the reported concentrations of COCs indicates compounds at the following sites may present potential risk to groundwater:

- ERP Site 7: TPH-D, benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)-pyrene, arsenic, and lead.
- AOC J: PCB Aroclor 1260; and
- AOC K: PCB Aroclor 1260.

The metal arsenic was detected above the residential and industrial PRGs in 10 samples. One of these samples contained arsenic at a concentration equal to the ESL; the remainder were below the ESL. Due to the widespread presence of arsenic in samples collected to date, the concentrations of this compound may be within the range of background concentrations for the Hayward ANG Station. As a result, the presence of arsenic in soil will not be used to evaluate the effectiveness of the remedial action. Site-specific background concentrations of metals at the facility will be evaluated during later phases of the site evaluation (RI/FS).

2.3.2 Protection of Groundwater Risk Evaluation

The ESLs were developed by the RWQCB to address environmental protection goals presented in the *Water Quality Control Plan for the San Francisco Bay Basin* (RWQCB, 1995). Comparison of these screening criteria with the reported concentrations of COCs in near-surface soils indicates the following compounds at the indicated sites may present potential risk to groundwater:

- ERP Site 7: TPH-D, benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)-pyrene, arsenic, cadmium, lead, and thallium.
- AOC J: PCB Aroclor 1260; and
- AOC K: TPH-D and PCB Aroclor 1260.

The metals arsenic, cadmium, and thallium, detected above the screening criteria, may be within the range of background concentrations for the

Hayward ANG Station. As described in Section 2.3.1.2, arsenic has been reported at low concentrations in a large number of samples but may be naturally occurring at the facility. Similarly, cadmium and thallium have been reported at concentrations that exceed the ESLs but may be representative of background concentrations. As a result, the presence of arsenic as well as cadmium and thallium in soil will not be used to evaluate the effectiveness of the remedial action. However, site-specific background concentrations of metals at the facility will be evaluated during later phases of the site evaluation (RI/FS).

SECTION 3.0

IDENTIFICATION OF REMOVAL ACTION OBJECTIVES AND SCOPE

This section identifies the objectives and regulatory requirements for the proposed removal actions. Identification of the regulatory requirements consists of an analysis of Applicable or Relevant and Appropriate Requirements (ARARs). ARARs affect the development and selection of feasible and appropriate means of remediation for contaminants that exceed current regulatory levels and are used to establish treatment baselines. ARARs identified in this section are considered when developing removal action alternatives in Section 4.0.

3.1 Objectives of the Removal Actions

The objectives of the proposed removal actions are:

- Prevent human exposure to COCs that exceed acceptable concentrations;
- Reduce the potential for migration (through soil erosion) of the COCs, further reducing the risk to human health and the environment;
- Reduce the potential for leaching of COCs into the groundwater; and
- Allow for continued industrial use of the land.

To achieve the objectives, it is proposed that a remedial response be implemented to address soil at ERP Site 7 and AOCs J and K containing concentrations of COCs above their respective residential PRGs or ESLs. These standards are protective of human health and groundwater and are conservative given the anticipated continuation of industrial land use. Cleanup to these standards will also allow for unrestricted reuse of the sites. Proposed cleanup goals (residential soil PRGs and ESLs) for the COCs present at the sites are shown in Table 3-1.

Table 3-1

Soil Remedial Goals
AOC J , AOC K, and ERP Site 7
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Constituent	Industrial PRG	Residential PRG	ESL	Proposed Remedial Goal [1]
Polynuclear aromatic hydrocarbons				
Anthracene	100,000	22,000	2.8	**2.8**
Benzo(a)anthracene	2.1	0.62	0.38	**0.38**
Benzo(a)pyrene	0.21	0.062	0.038	**0.038**
Benzo(b)fluoranthene	2.1	0.62	0.38	**0.38**
Benzo(k)fluoranthene	1.3*	0.38*	0.38	**0.38**
Chrysene	13*	3.8*	3.8	**3.8**
Fluoranthene	22,000	2,300	40	**40**
Indeno(1,2,3-cd)pyrene	2.1	0.62	0.38	**0.38**
Pyrene	29,000	2,300	85	**85**
Metals				
Arsenic	0.25*	0.06*	5.5	**0.06** [2]
Beryllium	1,900	150	4	**4**
Cadmium	450	37	1.7	**1.7** [2]
Chromium (Total)	450	210	58	**58**
Copper	41,000	3,100	230	**230**
Lead	750	150	200	**150**
Mercury	310	23	2.5	**2.5**
Nickel	20,000	1,600	150	**150**
Selenium	5,100	390	10	**10**
Thallium	67	5.2	1	**1** [2]
Zinc	100,000	23,000	600	**600**
Polychlorinated Biphenyls	0.74	0.22	0.22	**0.22**
Total petroleum hydrocarbons	1000 [3]	--	100 [4]	**100**

Notes and Abbreviations:

Concentrations reported in milligrams per kilogram (mg/kg).

(1) = Except for metals, the proposed remedial goal is the lowest value specified in the industrial PRGs, residential PRGs or ESLs. For metals, the lowest of these screening criteria is used, except where sample results indicate that background conditions may contain higher concentrations; see note (2).

(2) = Arsenic, cadmium, and thallium may be naturally present at concentrations greater than the lowest applicable risk-based screening criterion. Concentrations of these metals will not be used to determine if remedial objectives have been fulfilled. Data collected during the removal action will be evaluated as part of future investigations.

(3) = Regional Water Quality Control Board reuse number for heavy fraction TPH in soil.

(4) = The ESL for all hydrocarbon fractions is 100 mg/kg.

* = For compounds that have a California Modified PRG, this value is used.

-- = Not applicable

ESL = Environmental Screening Level, for the following conditions: surface soil; residential land use; and groundwater is a potential drinking water source

PRG = Preliminary Remediation Goal, 2004

UCL = Upper Confidence Limit

3.2 Areas and Volumes of Impacted Media

Site characterization data presented in Section 2.0 indicate that the areas and volumes of impacted soil are approximately as follows. For all three sites, the depth of impacted soil is limited to less than 3 feet below ground surface.

In ERP Site 7, the area is approximately 8,267 square feet. It is estimated that soil exceeding industrial standards is present to a depth of approximately one-half foot below ground surface, with a total in-place volume of impacted soil of 153 cubic yards. It is estimated that soil exceeding residential standards is present to a depth of approximately 1 foot below ground surface, with a total in-place volume of impacted soil of 306 cubic yards.

In AOC J, the area is approximately 405 square feet. It is estimated that soil exceeding industrial standards is present to a depth of approximately one-half foot below ground surface, with a total in-place volume of impacted soil of 7.5 cubic yards. It is estimated that soil exceeding residential standards is present to a depth of approximately 1 foot below ground surface, with a total in-place volume of impacted soil of 15 cubic yards.

In AOC K, the area is approximately 270 square feet. It is estimated that soil exceeding industrial standards is present to a depth of approximately one-half foot below ground surface, with a total in-place volume of impacted soil of 5 cubic yards. It is estimated that soil exceeding residential standards is present to a depth of approximately 1 foot below ground surface, with a total in-place volume of impacted soil of 10 cubic yards..

Due to the limited data available, the above volumes are estimates of the amount of impacted material.

3.3 Applicable or Relevant and Appropriate Requirements

Site characterization and remediation conducted under CERCLA (1980), as amended by the Superfund Amendments and Reauthorization Act of 1986, require the identification and consideration of ARARs. ARARs include standards, criteria, or limitations that have been promulgated

under Federal or State law. Although the Hayward ANG Station is not on the National Priorities List, the ARARs process provides a convenient means of identifying the requirements.

A requirement may be either applicable or relevant and appropriate, but not both. Applicable requirements are those remedial standards, standards of control, or other environmental protection criteria or limitations that are promulgated under Federal or State law that specifically address hazardous substances, pollutants, contaminants, remedial actions, locations, or other circumstances at the site. Relevant and appropriate requirements are those promulgated Federal and State requirements that, while not applicable to the circumstances at the site, address problems or situations sufficiently similar to those encountered at CERCLA sites that their use is well suited to the target site of concern.

USEPA identifies three categories of ARARs:

Chemical-specific ARARs are numerical standards set by various regulatory and government agencies that indicate the concentrations of certain compounds permitted in air, soil, groundwater, surface water, and sediments.

Action-specific ARARs generally set performance, design, or other similar action-specific controls or restrictions on study area activities related to the management of hazardous substances.

Location-specific ARARs are restrictions placed on the conduct of activities solely because they are in specific locations. These ARARs may include restrictions such as those imposed on activities conducted in floodplains, in areas that may experience earthquake activity, in areas of historical significance, or areas of rare and endangered species habitat.

In addition to laws, regulations, and policies that are directly applicable or relevant and appropriate, certain other standards may have some relevance warranting their consideration as an item "to-be-considered" (TBC). TBCs include advisories or guidance documents issued by regulatory agencies that are not legally binding. TBCs may influence the selection of a remedy to allow the optimal remedy to be identified. TBCs can also be divided into chemical-specific, action-specific, and location-specific types.

Chemical-, action-, and location-specific potential ARARs and TBCs for the characterization and remediation of soil and sediment at these three sites are summarized in Table 3-2.

Table 3-2

Summary of Applicable or Relevant and Appropriate Requirements and Requirements "To be Considered" for Removal Action in ERP Site 7 and AOCs J and K Hayward Air National Guard Station Hayward, California

Chemical-Specific ARARs	Agency	Reference	Description	Comment
Hazardous Waste - Identification	USEPA/ DTSC	40 CFR 261/ 22 CCR 66261	Sets standards for classification of hazardous wastes. Establishes constituent levels for characteristic wastes and lists of wastes considered to be hazardous.	All wastes generated during site activities must be evaluated to determine if they are hazardous.
Hazardous Waste - Land Disposal Restrictions	USEPA/ DTSC	40 CFR 268/ 22 CCR 66268	Sets land disposal restriction constituent concentrations and treatment standards.	Hazardous wastes generated during site activities must meet LDR standards prior to land disposal.
Toxic Substances Control Act - PCB Spill Cleanup Requirements	USEPA	40 CFR 761 Subpart G	Sets cleanup requirements for PCB spills.	Establishes federal definition of "clean soil" as 1 mg/kg PCBs in soil for protection of human health.

Chemical-Specific TBCs	Agency	Reference	Description	Comment
Preliminary Remediation Goals	USEPA	PRG Table - October 2004	Sets a PRG for potential industrial and residential uses for a variety of compounds.	May be used for general risk screening purposes or to set initial cleanup goals.
Proposed Corrective Action Rule (40 CFR 264 Subpart S) Action Levels	USEPA	55 CFR 30798	Sets action levels for certain chemicals in soil; exceeding action levels may trigger requirements for additional investigation or remediation.	May be used in determining whether contamination poses potential threat to human health or the environment.
	RWQCB	SFBRWQCB July 2003	Establishes ESLs for over 100 chemicals commonly found at sites with contaminated soil and groundwater.	May be used for general risk screening purposes or to set initial cleanup goals.
Designated Level Methodology for Waste Classification and Cleanup Level Determination	RWQCB	CVRWQCB June 1989	Guidance on how to classify wastes under the definitions contained in the Chapter 15 regulations to select appropriate disposal practices protective of beneficial uses of waters of the state.	

Action-Specific ARARs	Agency	Reference	Description	Comment
Air Resources Act	CA Air Resources Board/ BAAQMD	Health & Safety Code, Div. 26, Sec. 39000 et seq.	Regulates both vehicular and nonvehicular sources of air contaminants in California. Defines relationship of California Air Resources Board and local or regional air pollution control districts. Establishes ambient air quality standards and permit procedures.	Applicable to air emission sources. The BAAQMD is the enforcement agency.
Air - Opacity	BAAQMD	Regulation 6 Rule 301	Sets limits for opacity of emissions (Number 1 on the Ringelmann chart).	Applicable to emissions of visible air contaminants. Associated with dust-producing actions.
Air - Nuisance	BAAQMD	Regulation 6 Rule 305	Prohibits discharge of air contaminants in quantities that cause nuisance.	Applicable to emissions of air contaminants that may cause nuisance beyond the owner's property boundary.
Air - Particulate Matter	BAAQMD	Regulation 8 Rule 40	Limits the emission of organic compounds from soil that has been contaminated by organic chemicals and specifies acceptable procedures for controlling emissions.	Applicable to excavation of soil impacted with organic compounds.

Table 3-2

Summary of Applicable or Relevant and Appropriate Requirements and Requirements "To be Considered" for Removal Action in ERP Site 7 and AOCs J and K Hayward Air National Guard Station Hayward, California

Action-Specific ARARs (cont'd)	Agency	Reference	Description	Comment
OSHA Hazardous Waste Operations and Emergency Response	Cal/OSHA	29 CFR 1910.120/ 8 CCR 5192	Worker training and health and safety plan requirements for site cleanup operations.	Applicable to on-site workers engaged in site cleanup operations.
OSHA Excavation Standards	Cal/OSHA	29 CFR 1926/ 8 CCR 1540 and 341	Includes requirements for benching, sloping, or shoring of excavations to prevent cave-ins; entry into any excavation deeper than 5 feet requires a permit.	Applicable to excavation activities.
OSHA Heavy Equipment Operation Standards	Cal/OSHA	29 CFR 1926/ 8 CCR 1590 and 3649	Requirements for safe operation of haulage, earthmoving, industrial trucks and tractors.	Applicable to activities involving the use of heavy equipment.
OSHA Head, Eye, Face, and Hearing Protection Standards	Cal/OSHA	29 CFR 1926 Subpart E/ 8 CCR 3381, 3382, 5162, and 5097.	Specific details regarding personal protective equipment and noise levels for hearing protection for workers.	Applicable to activities where employees may encounter hazards requiring the use of personal protective equipment or hearing protection.
OSHA Worker Protection Programs	Cal/OSHA	29 CFR 1910.1200/ 8 CCR 5194 and 3203	Written program requirements include hazard communication, illness and injury prevention plan.	Employees who may be exposed to hazardous substances must be informed of those hazards in accordance with hazard communication requirements. All employers must develop illness and injury prevention plan for providing information on safe and healthy work.
Hazardous Waste	DTSC	22 CCR 66260	Provides definitions of terms used in the hazardous waste regulations under Title 22 of the California Code of Regulations.	Applicable to activities generating wastes; wastes must be classified using generator knowledge or waste analysis.
Hazardous Waste Identification	DTSC	22 CCR 66261	Sets standards for classification of RCRA hazardous wastes and California hazardous wastes and requirements for recycling and reclamation of RCRA and California hazardous wastes.	Wastes generated during site activities (including residues from treatment operations) must be evaluated to determine if hazardous.
Hazardous Waste Generator Standards	DTSC	22 CCR 66262	Requirements for generation, on-site management, and off-site transportation of RCRA and non-RCRA hazardous waste.	Waste generated during site activities must be managed in accordance with these standards if determined to be a hazardous waste.
Land Use Controls	DTSC	CCC section 1471	Allows an owner of land to make a covenant to restrict use of land for the benefit of a covenantee. The covenant runs with the land to bind successive owners.	In the event a remedy is selected that does not result in unrestricted use, a LUC between the City of Hayward and DTSC will be signed and recorded with Alameda County prior to DTSC certification that the removal action has been completed.
	DTSC	CHSC 25222.1 and 25355.5	Authorizes DTSC to enter into an agreement with a land owner to restrict the present and future use of land.	
	DTSC	CHSC 25233	Provides a process and criteria for requesting a variance from a land use restriction.	
	DTSC	CHSC 25234	Provides a process and criteria for requesting the removal or termination of land use restrictions.	
	DTSC	22 CCR 67391.1	Provides the requirements for land use covenants when contaminants will remain on land at levels which are not suitable for unrestricted use of land.	

Table 3-2

Summary of Applicable or Relevant and Appropriate Requirements and Requirements "To be Considered" for Removal Action in ERP Site 7 and AOCs J and K Hayward Air National Guard Station Hayward, California

Action-Specific ARARs (cont'd)	Agency	Reference	Description	Comment
Hazardous Waste	DTSC	40 CFR 265, 264/ 22 CCR 66265, 66264	Requirements for management/storage of hazardous waste in containers.	Applicable to any hazardous wastes accumulated or stored in containers.
Hazardous Waste	DTSC	40 CFR 264 and 265 Subpart B/ 22 CCR 66264 and 66265	General facility standards for on-site treatment, storage, or disposal of hazardous waste.	Applicable to alternatives involving treatment, storage, or disposal of hazardous waste.
Hazardous Waste	DTSC	40 CFR 264, 265 Subpart C/ 22 CCR 66264 and 66265	Preparedness and prevention requirements applicable to on-site treatment, storage, and disposal of hazardous waste. Applies to generators and TSDs.	Applicable to alternatives involving treatment, storage, or disposal of hazardous waste.
Hazardous Waste	DTSC	40 CFR 264, 265 Subpart D/ 22 CCR 66264 and 66265	Contingency plan requirements applicable to on-site treatment, storage, and disposal of hazardous waste. Applies to generators and TSDs.	Applicable to alternatives involving treatment, storage, or disposal of hazardous waste.
Hazardous Waste	DTSC	40 CFR 264, 265 Subpart E/ 22 CCR 66264 and 66265	Manifesting, record keeping, and reporting requirements applicable to TSDs.	Applicable to alternatives involving treatment, storage, or disposal of hazardous waste.
Hazardous Waste	USEPA/ DTSC	40 CFR 264, 265 Subpart F/ 22 CCR 66264 and 66265	Establishes monitoring requirements for facilities that treat, store, or dispose of hazardous waste.	Applicable to alternatives involving treatment, storage, or disposal of hazardous waste.
Hazardous Waste	USEPA/ DTSC	40 CFR 264, 265 Subpart G/ 22 CCR 66264 and 66265	Closure and post-closure requirements for hazardous waste treatment, storage, and disposal in new on-site units.	Applicable to alternatives involving creation of new treatment, storage, or disposal units.
Hazardous Waste	USEPA/ DTSC	40 CFR 264, 265 Subpart K/ 22 CCR 66264 and 66265	Requirements for surface impoundment (waste pile) liner to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or ground water.	Applicable to alternatives involving hazardous waste piles.
Hazardous Waste	USEPA/ DTSC	40 CFR 264, 265 Subpart L/ 22 CCR 66264 and 66265	Requirements for storage of hazardous waste in a waste pile for greater than 90 days.	Applicable to alternatives in which hazardous waste is stored in a waste pile for greater than 90 days.
Hazardous Waste	USEPA/ DTSC	40 CFR 264, 265 Subpart N/ 22 CCR 66264 and 66265	Requirements for hazardous waste landfills.	Applicable to alternatives involving land disposal of hazardous waste.
Hazardous Waste	DTSC	Health and Safety Code 25123.3	Remediation waste staging requirements allowing the temporary accumulation of non-RCRA contaminated soil provided that certain conditions are met.	Applicable to activities that involve temporary accumulation of non-RCRA contaminated soil. Requires an impermeable surface, controls to prevent dispersion or runoff, inspections, and certification.
Hazardous Waste - Land Disposal Restrictions	DTSC	22 CCR 66268	Establishes land disposal restrictions and treatment standards for hazardous wastes applicable to generators.	Any hazardous wastes generated as a result of on-site activities or by treatment systems must meet LDR requirements.
Hazardous Material/Hazardous Waste Transportation Requirements	USEPA/ DOT	40 CFR 262/49 CFR 172/ 22 CCR 66262	Requirements for packaging, labeling, placarding, and transporting hazardous waste.	Any hazardous wastes shipped off site for disposal must meet the requirements for hazardous waste shipping and transportation.
Discharge of Waste to Land	RWQCB	23 CCR Chapter 15	Waste and site classifications of waste landfills, including allowable soluble constituent concentrations.	Applicable to on-site land disposal of wastes.
OSHA Worker Lead Exposure Standard	Cal/OSHA	29 CFR 1910.1025/ 8 CCR 5216	Specific standard for occupational exposure to lead; includes requirements for monitoring and protective equipment. The PEL for lead is currently 50 $\mu g/m^3$ for an 8-hour TWA.	If concentrations of lead in air exceed the PEL, control measures will be required. This applies to dust-producing actions.

Table 3-2

Summary of Applicable or Relevant and Appropriate Requirements and Requirements "To be Considered" for Removal Action in ERP Site 7 and AOCs J and K Hayward Air National Guard Station Hayward, California

Action-Specific ARARs (cont'd)	Agency	Reference	Description	Comment
OSHA Worker Vinyl Chloride Exposure Standard	Cal/OSHA	29 CFR 1910.1017/ 8 CCR 5210	Specific standard for occupational exposure to vinyl chloride; includes requirements for monitoring, protective equipment, and decontamination. The PEL for vinyl chloride is currently 1 ppm for an 8-hour TWA.	If concentrations of vinyl chloride in air exceed the PEL, control measures will be required. This applies to actions that may encourage offgassing of VOCs.
OSHA Permissible Exposure Limits	Cal/OSHA	29 CFR 1910.1001/ 8 CCR 5155	Requirements for controlling employee exposure to airborne contamination during work operations; sets PELs for specified contaminants and workplace monitoring requirements.	If concentrations of any specified contaminants in air exceed the PEL, control measures (administrative or engineering controls, or personal protective equipment) will be required. This applies to dust-producing actions or actions that may encourage offgassing of VOCs.
OSHA Permissible Exposure Limits	City of Hayward	Municipal Code Section 10 Article 15	Trees having a minimum trunk diameter of 8 inches measured 54 inches above the ground surface are protected trees	If a protected tree is removed, it must be replaced with a like-kind or like-sized tree. If a similar tree is not available, a valuation of the protected tree will be used to determine the number and size of trees required to replace the protected tree.

Key:

ARARs = Applicable or relevant and appropriate requirements
BAAQMD = Bay Area Air Quality Management District
CA = California
Cal-OSHA = California Occupational Safety and Health Administration
CCC = California Civil Code
CCR = California code of regulations
CFR = Code of federal regulations
CHSC = California Health and Safety Code
CVRWQCB = Central Valley Regional Water Quality Control Board
DOT = Department of Transportation
DTSC = California Department of Toxic Substances Control
ESLs = Environmental Screening Levels
LDR = Land disposal restrictions
LUC = Land use control
$\mu g/m^3$ = Micrograms per cubic meter
mg/kg = Milligrams per kilogram
OSHA = Federal Occupational Safety and Health Administration
PCB = Polychlorinated biphenyls
PEL = Permissible exposure limits
ppm = Parts per million
PRG = Preliminary remediation goal
RCRA = Resource Conservation and Recovery Act
RWQCB = California Regional Water Quality Control Board
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
TBCs = To be considered
TSDs = Treatment, storage, and disposal facilities
TWA = Time weighted average
USEPA = United States Environmental Protection Agency
VOCs = Volatile organic compounds

3.3.1 ARAR Selection Considerations

The following points were considered by the ANG in selecting ARARs pertaining to the removal of soils at the selected sites in the RAW:

- As stated in the Federal regulations, "applicable" requirements are those that apply to the release or remedial action contemplated based on an objective determination of whether the requirement specifically addresses a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at the site (40 Code of Federal Regulations [CFR] 300.400 [g][1]).
- Federal regulations describe "relevant and appropriate" requirements as those that address problems or situations sufficiently similar to the circumstances of the release or remedial action contemplated, and whether the requirement is well suited to the site (40 CFR 300.400 [g][2]).
- Federal regulations identify the following comparisons that should be made when pertinent to determine relevance and appropriateness:

    1. The purpose of the requirements and the purpose of the action;
    2. The medium regulated or affected by the requirement and the medium contaminated or affected at the site;
    3. The substances regulated by the requirement and the substances found at the site;
    4. The actions or activities regulated by the requirement and the actions contemplated at the site;
    5. Any variances, waivers, or exemptions of the requirements, and their availability for the circumstances at the site;
    6. The type of place regulated and the type of place affected by the release or action;
    7. The type and size of structure or facility regulated, and the type and size of structure or facility affected by the release; and
    8. Any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resource at the site (40 CFR 300.400 [g][2]).

SECTION 4.0

DEVELOPMENT OF REMOVAL ACTION ALTERNATIVES

This section develops removal action alternatives that satisfy the removal action objectives and comply with the ARARs identified in Section 3.0 of this document.

The removal action alternatives were developed relying on practical, proven technologies, engineering judgment, waste minimization (where feasible), and professional experience. Based on this experience, the number of practical and suitable treatments that can be applied to surface soils impacted by organic compounds and metals are limited. For example, treatment technologies for the ex-situ removal of metals (e.g., soil washing) are available and their effectiveness is well documented, but they are cost-prohibitive for the very small size of the proposed removal action.

Four potential removal action alternatives have been identified for the site:

- No action;
- Soil Excavation to Industrial PRGs and Landfill Disposal, with Institutional Controls;
- Soil Excavation to Residential PRGs and ESLs, and Landfill Disposal; and
- Capping, with Institutional Controls.

The following subsections present a conceptual description of each of these alternatives. The conceptual descriptions of each of the alternatives presented below are sufficient to evaluate and compare the alternatives later in this document.

4.1 Alternative I - No Action

A No Action alternative is included in the analysis to serve as a baseline against which to compare the other removal action alternatives. Inclusion of this alternative is required by the *National Oil and Hazardous Substances Pollution Contingency Plan* (USEPA, 1990). Because no remedial activities would be implemented, long-term human health and environmental risks for the three sites would essentially be the same as those currently identified. Under this alternative, impacted soil would continue to potentially threaten groundwater beneath the site and pose a potential health risk to on-site workers or, in the event the land use changed, to other users of the sites.

4.2 Alternative II - Excavation and Off-Site Disposal

Excavation would involve the removal of the soils affected by COCs using conventional excavation equipment (bulldozers, backhoes, etc.). Confirmation sampling would be performed to verify that the COCs were removed to concentrations below the cleanup goals. The criteria used to evaluate the effectiveness of the remedial action would be based on the anticipated future land use. As discussed in Section 2.3, chemical-specific screening criteria have been established for use in industrial and residential land-use scenarios. The screening criteria are discussed in the following sections.

Excavation of soils impacted with metals, PAHs, PCBs, and/or TPH is a quick and effective method of remediation. It is easily implemented and cost effective, as it only requires the use of conventional construction equipment. Excavation is often preferred over other alternatives because it permanently removes impacted soils from the site. Therefore, excavation of soil impacted with COCs at ERP Site 7 and AOCs J and K was retained for further consideration.

Because excavation alone is not an acceptable remedial technology, landfill disposal of the affected soils would also be required.

4.2.1 Alternative II-A – Soil Excavation to Industrial PRGs and Landfill Disposal, with Institutional Controls

With this technology, excavation of all soils affected above industrial PRGs with metals, PAHs, PCBs, and/or TPH would be transported off

site and disposed of at an appropriate landfill. Excavation and off-site disposal is a well-proven and implementable technology.

The existing analytical data indicate that concentrations of COCs in soil proposed for removal only slightly exceed their industrial PRGs. Based on that data, soil removed from the three sites would likely be classified as "non-hazardous" or "designated" waste and may be disposed of at a Class II, or possibly a Class III landfill. However, affected soils must be tested and profiled according to individual landfill requirements prior to acceptance. Following excavation, the site would be backfilled and restored to pre-excavation conditions.

Land use restrictions would be placed in the deed limiting the site to industrial use, and a Land Use Covenant would be required to ensure the restrictions are not removed without DTSC approval. These restrictions would include:

- A State-approved plan for grading, excavation, and intrusive activities in the affected areas; and
- Restrictions on the property to exclude residences, schools, daycare facilities, hospitals, hospices, or other similar sensitive uses.

Site access controls (fencing) would be maintained to restrict access to the site by the general public, thereby limiting potential human exposure to impacted soils. Backfilling the site with clean soil would reduce the risk of erosion and off-site transportation of remaining contaminants. A site inspection, monitoring, and maintenance program, along with a Land Use Control (LUC) Implementation Plan, would also be included as part of this alternative. The need for and scope of any groundwater investigation and monitoring will be determined during the RI/FS.

Based on these considerations, excavation and off-site disposal of soils above industrial PRGs is considered to be a viable option, and was retained for additional evaluation.

4.2.2 Alternative II-B – Soil Excavation to Residential PRGs and ESLs, and Landfill Disposal

With this technology, excavation of all soils affected above residential PRGs and ESLs with metals, PAHs, PCBs, and/or TPH would be transported off site and disposed of at an appropriate landfill. Excavation and off-site disposal is a well-proven and implementable technology.

The existing analytical data indicate concentrations of COCs in soil proposed for removal only slightly exceed their residential PRGs and/or ESLs. Based on that information, it is anticipated that soil removed from the three sites to residential PRGs would likely be classified as "non-hazardous" or "designated" waste and may be disposed of at a Class II, or possibly a Class III landfill. However, affected soils must be tested and profiled according to individual landfill requirements prior to their acceptance. Following excavation, the site would be backfilled and restored to pre-excavation conditions.

Based on the removal of all impacted site soils above remedial goals (the lower of residential PRGs or ESLs), monitoring for purposes of assessing groundwater contamination associated with these soils may not be needed. However, the need for and scope of any groundwater investigation and monitoring will be determined during the RI/FS. Based on the removal of all impacted site soils above residential PRGs, institutional controls would not be required. Based on these considerations, disposal of soils above residential PRGs and ESLs in a landfill is considered to be a viable option, and was retained for additional evaluation.

4.3 Alternative III - Capping, With Institutional Controls

Under Alternative III, an asphalt concrete cap would be installed at locations where chemical-impacted soil has been detected.

The cap would serve to prevent soil erosion and infiltration of surface water through impacted soils and groundwater and would eliminate potential human exposure to impacted soils. This cap would consist of a 4-inch-thick asphalt concrete layer constructed upon an 8-inch-thick base rock layer. A bituminous seal coat would be applied to the surface.

The cap would be installed with an independent surface water collection system installed and connected to the City of Hayward storm drain system. A permit would be obtained from the City to discharge to the storm sewer system. Following installation of the drainage system, the aggregate base would be placed and compacted in the areas to be paved. Finally, the asphalt concrete would be placed followed by application of a bituminous seal coat surface.

The cap and drainage system would be designed to prevent ponding of surface water. Storm water runoff entering the storm drain system from the site may need to be sampled following construction of the cap to

verify compliance with the storm water discharge permit. Periodic inspection, crack repair, and reapplication of the seal coat will be performed to ensure that the cap maintains low permeability.

Land use restrictions would be placed in the deed limiting the site to industrial use, and a Land Use Covenant would be required to ensure the restrictions are not removed without DTSC approval. These restrictions would include:

- A State-approved plan for grading, excavation, and intrusive activities in the capped areas; and

- Restrictions on the property to exclude residences, schools, daycare facilities, hospitals, hospices, or other similar sensitive uses.

Site access controls (fencing) would be maintained, thereby limiting potential human exposure to impacted soils. Groundwater monitoring may be required to demonstrate cap effectiveness. However, the need for and scope of any groundwater investigation and monitoring will be determined during the RI/FS. A cap inspection, monitoring, and maintenance program, along with a LUC Implementation Plan, would also be implemented at the site as part of this alternative.

This alternative was retained for further evaluation.

SECTION 5.0

ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section presents a detailed evaluation of four removal action alternatives developed in Section 4.0 of this document with respect to the criteria set forth in the *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA* (USEPA, 1993).

5.1 Evaluation Criteria

The *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA* (USEPA, 1993) describes three criteria (effectiveness, implementability, and cost) that must be used to evaluate the removal action alternatives, including:

1. Effectiveness
    - Ability to achieve removal action objectives, and overall protectiveness of human health and the environment;
    - Reduction of toxicity, mobility, or volume;
    - Short- and long-term effectiveness and permanence; and
    - Compliance with ARARs.
2. Implementability
    - Technical and administrative feasibility;
    - Availability of materials and sources;
    - Regulatory acceptance; and
    - Community acceptance.
3. Cost Analysis
    - Capital Cost; and

- Long-term Operation and Maintenance.

The three criteria are summarized and discussed below.

5.1.1 Effectiveness

The effectiveness criterion measures how well the alternative provides for the protection of human health and the environment and meets the removal action objectives:

- Prevent human exposure to COCs that exceed acceptable concentrations;
- Reduce the potential for migration (through soil erosion) of the COCs, further reducing the risk to human health and the environment;
- Reduce the potential for leaching of COCs into the groundwater; and
- Allow for continued industrial use of the land.

Effectiveness also measures the long-term reliability of the alternative, including any uncertainties that may be associated with the alternative. This criterion includes an evaluation of the magnitude of residual risk posed by the presence of untreated waste or treatment residuals and an assessment of the reliability of the proposed equipment and process. This criterion also measures compliance with chemical- and location-specific ARARs.

5.1.2 Implementability

The implementability criterion measures the ease or difficulty of conducting the proposed removal action. Included in this criterion are the technical feasibility of the project, the ease of undertaking additional actions, and the ability to monitor the effectiveness of the action. This criterion also measures compliance with action-specific ARARs. Additionally, it assesses the availability of the required equipment, materials, and services, as well as site-specific constraints such as availability of treatment areas. This criterion also measures the administrative feasibility (i.e., permit availability and regulatory acceptance) of the action and the likelihood of public acceptance of the action.

5.1.3 Cost

The cost criterion assesses the financial burden associated with implementing the removal action alternative. The costs of an alternative include construction, engineering, permitting, and other services necessary to carry out the action and maintain the action into the future.

5.2 Analysis of Removal Action Alternatives

In this section, the removal action alternatives developed in Section 4.0 are evaluated with respect to the three criteria described above. The results of the detailed evaluation are presented below.

5.2.1 Alternative I - No Action

Under this alternative, no remedial actions of any kind would be implemented at the three sites. The No Action alternative provides a baseline against which to compare other alternatives. Under this alternative, all soil containing COCs would remain in place. Because no remedial activities would be implemented, long-term human health and environmental risks at each site would essentially be the same as those currently identified. The No Action alternative does not satisfy the removal action objectives and it is therefore not effective.

5.2.2 Alternative II-A - Soil Excavation to Industrial PRGs and Landfill Disposal, with Institutional Controls

With Alternative II-A, near-surface soils at ERP Site 7 and AOCs J and K with concentrations of COCs above industrial PRGs would be removed using conventional construction equipment such as backhoe or shovel.

Excavation and landfill disposal is an effective method of reducing the mobility of contaminants, but does not decrease the inherent toxicity or volume of contaminants. Even so, removing soil with concentrations greater than industrial PRGs would prevent human exposure to COCs that exceed acceptable concentrations for the current industrial use, reduce the potential for migration (through soil erosion) of the COCs, reduce the potential for leaching of COCs into the groundwater, and allow for continued industrial use of the land. This activity would be conducted in accordance with the ARARs identified in Table 3-2, including

institutional controls to address residual contamination above the residential PRGs.

To be protective of site workers and the public, the work would be performed in accordance with a HASP, including dust monitoring using direct read instruments. Dust mitigation measures will also be used, including the application of water to stockpiles, grading and compacting the surface of the stockpiles to minimize the amount of loose soil that creates dust, and applying a dust suppressant. In addition, the work would be implemented in accordance with all applicable Federal, State, and local health and safety regulations, including the California Occupational Safety and Health Administration (Cal-OSHA) Title 8 California Code of Regulations (CCR) Section 5192, Construction Safety Orders, and the Federal OSHA (Fed-OSHA) Construction Industry Standards in Title 29 Code of Federal Regulations (CFR), part 1926, as applicable.

Following receipt of soil stockpile characterization results, excavated soil would be disposed of at an appropriately permitted landfill designed to contain characterized waste. It is anticipated the wastes can be disposed of at a Class II or Class III landfill.

Alternative II-A would meet all of the removal action objectives, and be in compliance with the ARARs. Costs associated with the implementation of Alternative II-A for proposed removal actions at ERP Site 7 and AOCs J and K are detailed in Table 5-1.

5.2.3 Alternative II-B - Soil Excavation to Residential PRGs and ESLs, and Landfill Disposal

With Alternative II-B, near-surface soils at ERP Site 7 and AOCs J and K with concentrations of COCs above residential PRGs and ESLs would be removed using conventional construction equipment such as backhoe or shovel. Excavation and landfill disposal is an effective method of reducing the volume of contaminants in the soil at the site over the short and long term.

Removing all of the impacted soil above residential PRGs and ESLs would prevent human exposure to COCs that exceed acceptable concentrations for both the current industrial use and any future uses, eliminate the potential for migration (through soil erosion) of the COCs, eliminate the potential for leaching of COCs into the groundwater, and allow for continued industrial use and possible residential use of the

Table 5-1

Estimated Cost to Implement Removal Action Alternative II-A
Cleanup to Industrial Standards
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

DESCRIPTION	NUMBER	UNIT	UNIT COST	TOTAL COST	NOTES
DIRECT CAPITAL COST					
Mobilize, Survey, and Stake Site to Outline Impacted Areas	2	Day	$6,000	$12,000	Assumes 2 days with a two-man crew and equipment (10 percent increase due to Health and Safety)
Excavate Affected Soil	166	yd^3	$36	$5,958	Assumes 0.5-foot excavation over three areas totaling approximately 9,000 square feet
Confirmation Sampling	53	ea	$320	$16,960	
Load and Haul Impacted Soil to Landfill (non-hazardous soil disposal)	248	ton	$46	$11,420	Does not include removal and disposal of transformer
Soil Disposal (non-hazardous soil disposal)	248	ton	$44	$10,923	Altamont Pass Landfill
Purchase and Import Off-Site Fill Material	248	ton	$25	$6,206	Assumes local borrow source
Place and Compact Fill Material	248	ton	$8	$1,986	
De-Mobilize	1	Day	$2,000	$2,000	
TOTAL DIRECT CAPITAL COST				**$65,000**	
INDIRECT CAPITAL COST					
Land Use Control Implementation Plan				$12,000	
Engineering, Procurement, and Administrative (6% of Direct Capital Costs)				$3,900	
Construction Management (10% of Direct Capital Costs)				$6,500	
Permitting (5% of Direct Capital Costs)				$3,250	
Project Management (6% of Direct Capital Costs)				$3,900	
Legal Fees to Negotiate and Implement Deed Restrictions				$20,000	
INDIRECT CAPITAL COST				**$50,000**	
General Contingency (20% of Total Capital Costs)				$23,000	
TOTAL CAPITAL COST (DIRECT AND INDIRECT)				**$138,000**	
Transformer removal and disposal				**$27,000**	
TOTAL COST OF ALTERNATIVE				**$165,000**	

land. This activity would be conducted in accordance with the ARARs identified in Table 3-2.

To be protective of site workers and the public, the work would be performed in accordance with a HASP, including dust monitoring using direct-read instruments. Dust mitigation measures will also be used, including the application of water to stockpiles, grading and compacting the surface of the stockpiles to minimize the amount of loose soil that creates dust, and applying a dust suppressant. In addition, the work would be implemented in accordance with all applicable Federal, State, and local health and safety regulations, including the Cal-OSHA Title 8 CCR Section 5192, Construction Safety Orders, and the Fed-OSHA Construction Industry Standards in Title 29 CFR, part 1926, as applicable.

Following receipt of soil stockpile characterization results, excavated soil would be disposed of at an appropriately permitted landfill designed to contain characterized waste. It is anticipated the wastes can be disposed of at a Class II or Class III landfill.

Alternative II-B would meet or exceed all of the removal action objectives. Costs associated with the implementation of Alternative II-B for proposed removal actions at ERP Site 7 and AOCs J and K are presented in Table 5-2.

5.2.4 Alternative III - Capping, With Institutional Controls

Under Alternative III, an asphalt concrete cap would be installed at locations where chemical-impacted soil has been detected.

This cap would consist of a 4-inch-thick asphalt concrete layer constructed upon an 8-inch-thick base rock layer. A bituminous seal coat would be applied to the surface. The cap would serve to prevent soil erosion and infiltration of surface water through impacted soils and groundwater and would eliminate potential human exposure to impacted soils.

Groundwater monitoring may be required to demonstrate cap effectiveness. However, the need for and scope of any groundwater investigation and monitoring will be determined during the RI/FS. A cap inspection, monitoring, and maintenance program, along with a LUC

Table 5-2

Estimated Cost to Implement Removal Action Alternative II-B
Cleanup to Residential Standards
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

DESCRIPTION	NUMBER	UNIT	UNIT COST	TOTAL COST	NOTES
DIRECT CAPITAL COST					
Mobilize, Survey, and Stake Site to Outline Impacted Areas	2	Day	$6,000	$12,000	Assumes 2 days with a two-man crew and equipment (10 percent increase due to Health and Safety)
Excavate Affected Soil	331	yd^3	$36	$11,916	Assumes 1-foot excavation over three areas totaling approximately 9,000 square feet
Confirmation Sampling	57	ea	$320	$18,240	
Load and Haul Impacted Soil to Landfill (non-hazardous soil disposal)	497	ton	$46	$22,839	Does not include removal and disposal of transformer
Soil Disposal (hazardous soil disposal)	497	ton	$44	$21,846	Altamont Pass Landfill
Purchase and Import Off-Site Fill Material	497	ton	$25	$12,413	Assumes local borrow source
Place and Compact Fill Material	497	ton	$8	$3,972	
De-Mobilize	1	Day	$2,000	$2,000	
TOTAL DIRECT CAPITAL COST				**$103,000**	
INDIRECT CAPITAL COST					
Engineering, Procurement, and Administrative (6% of Direct Capital Costs)				$6,180	
Construction Management (10% of Direct Capital Costs)				$10,300	
Permitting (2% of Direct Capital Costs)				$2,060	
Project Management (6% of Direct Capital Costs)				$6,180	
INDIRECT CAPITAL COST				**$25,000**	
General Contingency (20% of Total Capital Costs)				$25,600	
TOTAL CAPITAL COST (DIRECT AND INDIRECT)				**$154,000**	
Transformer removal and disposal				**$27,000**	
TOTAL COST OF ALTERNATIVE				**$181,000**	

implementation plan, would also be implemented at the site as part of this alternative.

The cap would be designed to prevent ponding of surface water. Periodic inspection, crack repair, and reapplication of the seal coat will be performed to ensure that the cap maintains low permeability.

Land use restrictions would be placed in the deed limiting the site to industrial use, and a Land Use Covenant would be required to ensure the restrictions are not removed without DTSC approval. These restrictions would include:

- A State-approved plan for grading, excavation, and intrusive activities in the capped areas; and

- Restrictions on the property to exclude residences, schools, daycare facilities, hospitals, hospices, or other similar sensitive uses.

Site access controls (fencing) would be maintained, thereby limiting potential human exposure to impacted soils and damage to the cap.

Each of the three sites presents different issues related to installation of a cap.

AOC J is an inactive transformer located on a concrete pad. The inactive transformer would be removed as part of this action, and a cap would be placed over the site, including the surrounding contaminated areas. This would prevent human exposure to COCs that exceed acceptable concentrations for the current industrial use, reduce the potential for migration (through soil erosion) of the COCs, and reduce the potential for leaching of COCs into the groundwater. The cap would also allow industrial use of the land, but for limited purposes (e.g., storage).

AOC K is an active transformer located on a concrete pad surrounded by a chain-link safety fence. The southern edge of the transformer pad is located along the ANG leasehold and fence that separates the site from the public. The proximity of AOC K to the property boundary would require the cap to be tapered to the ground on the property south of the Station (currently a public right-of-way) as well as the installation of a fence to prevent public access to the cap. The cap would reduce the vertical clearance from the overhead power lines and taper toward the transformer in a manner that has the potential to make inspection and maintenance of the transformer unsafe. The fence surrounding the transformer would need to be relocated outside the capped area. Finally,

the U-shape of the cap would tend to pond water, possibly damaging the transformer and compromising the integrity of the cap.

The cap might meet the first two remedial action objectives identified in Section 5.1.1:

1. Prevent human exposure to COCs that exceed acceptable concentrations; and

2. Reduce the potential for migration (through soil erosion) of the COCs).

However, it may be limited in its ability to meet the third and fourth remedial action objectives:

3. Reduce the potential for leaching of COCs into the groundwater; and

4. Allow for continued industrial use of the land.

Capping is not a viable alternative for AOC K.

ERP Site 7 is a storage area located at the northeastern corner of the ANG leasehold. Installation of a cap would require access to the leasehold east of the property boundary to allow the cap to taper to the ground. This is not considered a viable option for this site due to administrative difficulty in obtaining the appropriate authorization from the land owner.

To be protective of site workers and the public, the work would be performed in accordance with a HASP. In addition, the work would be implemented in accordance with all applicable Federal, State, and local health and safety regulations, including the Cal-OSHA Title 8 CCR Section 5192, Construction Safety Orders, and the Fed-OSHA Construction Industry Standards in Title 29 CFR, part 1926, as applicable. This alternative also meets the specific ARARs identified.

This alternative is technically feasible for AOC J, but not for AOC K or ERP Site 7, and can be implemented using readily available conventional equipment and services. Costs associated with the implementation of Alternative III for AOC J are presented in Table 5-3.

Table 5-3

Estimated Cost to Implement Removal Action Alternative III
Institutional Controls with Cap
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

DESCRIPTION	NUMBER	UNIT	UNIT COST	TOTAL COST	NOTES
DIRECT CAPITAL COST					
Mobilize, Survey, and Stake Site to Outline Impacted Areas	2	Day	$2,000	$4,000	Assumes full day with a two-man crew (10 percent increase due to Health and Safety)
Strip Grass and Apply Pre-Emergent	10,000	ft^2	$0.40	$4,000	Assumes cap will be limited to impacted areas
Purchase and Import Road Base	170	ton	$25	$4,250	Assumes local borrow source
Place and Compact Road Base	170	ton	$8	$1,360	
Cap Affected Areas with 3" of Compacted Asphalt	10,000	ft^2	$4	$40,000	
De-Mobilize	1	Day	$1,500	$1,500	
TOTAL DIRECT CAPITAL COST				**$55,000**	
INDIRECT CAPITAL COST					
Land Use Control Implementation Plan				$12,000	
Engineering, Procurement, and Administrative				$6,600	
Construction Management				$3,500	
Permitting				$4,000	
Project Management				$6,600	
Legal Fees to Negotiate and Implement Deed Restrictions				$20,000	
INDIRECT CAPITAL COST				**$53,000**	
General Contingency (20% of Total Capital Costs)				$21,600	
TOTAL CAPITAL COST (DIRECT AND INDIRECT)				**$130,000**	
Transformer removal and disposal				**$27,000**	
YEARLY OPERATIONS AND MAINTENANCE					
Project Management				$2,000	
Inspections				$3,000	
Sealing				$2,500	Based on a minimum charge
Reports				$2,000	
TOTAL YEARLY O&M COST (DIRECT AND INDIRECT)				**$9,500**	
NET PRESENT VALUE OF COSTS FOR 30 YEAR O&M				**$186,200**	
TOTAL COST OF ALTERNATIVE				**$398,000**	

SECTION 6.0

COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section presents the comparative analysis of the four removal action alternatives against the three screening criteria: effectiveness, implementability, and cost. The comparative rankings developed in this section were then used to select the recommended removal action alternative for the site. For this evaluation, each criterion was broken down into several subcriteria, as follows:

Criteria	Subcriteria
Effectiveness	• Ability to Achieve Removal Action Objectives • Overall Protection of Human Health and the Environment • Reduction of toxicity, mobility, or volume • Short- and long-term effectiveness and permanence • Compliance with ARARs
Implementability	• Technical and administrative feasibility • Availability of materials and sources • Regulatory acceptance • Community acceptance
Cost	• Capital Cost • Long-term Operation and Maintenance

The following subsection compares each removal action alternative against the criteria presented above. Table 6-1 summarizes the results of this comparative analysis.

Table 6-1

Comparative Analysis of Removal Action Alternatives
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Detailed Evaluation Criteria	Alternative I No Action	Alternative II-A Soil Excavation to Industrial PRGs and Landfill Disposal, with Institutional Controls	Alternative II-B Soil Excavation to Residential PRGs and ESLs, and Landfill Disposal	Alternative III Capping, with Institutional Controls
Effectiveness				
Overall Protection of Human Health and the Environment	Alternative I is not protective of human health or the environment because no actions would be taken to prevent water from infiltrating through impacted soils to groundwater and no action would be taken to limit human exposure to impacted soils.	Alternative II-A is protective of human health and the environment. Impacted soils with concentrations above risk-based screening levels for industrial sites will be removed.	Alternative II-B is protective of human health and the environment. All chemical-impacted soils will be removed from the site. Alternative II-B is considered more certain than the other alternatives.	Alternative III is protective of human health and the environment. However, because some of the chemical-impacted soils are left on-site, Alternative III is considered less certain than Alternative II-A.
Ability to Achieve Removal Action Objectives	Alternative I does not satisfy the removal action objectives.	Alternative II-A achieves most of the removal action objectives through removal of impacted soils from the site.	Alternative II-B achieves the removal action objectives through removal of impacted soils from the site.	Alternative III prevents the migration of compounds by preventing infiltration of surface water through impacted soils into groundwater and providing a barrier (cap) to human exposure to impacted soils. The presence of the cap precludes future land uses
Implementability				
Technical Feasibility	Alternative I is the most technically feasible because no remedial actions would be taken.	Alternative II-A is considered implementable. Land use controls would be placed in the deed limiting the site to industrial use, and prohibiting excavations in contaminated areas.	Alternative II-B is considered implementable. Land use controls would not be needed.	Alternative III is considered implementable for AOC J, but not for AOC K or ERP Site 7. The efforts associated with paving the site and long-term maintenance also make Alternative III more difficult to implement. Land use controls would be placed in the deed limiting the site to industrial use, and prohibiting excavations in contaminated areas.

Table 6-1

Comparative Analysis of Removal Action Alternatives
Removal Action Work Plan
Hayward Air National Guard Station
Hayward, California

Detailed Evaluation Criteria	Alternative I No Action	Alternative II-A Soil Excavation to Industrial PRGs and Landfill Disposal, with Institutional Controls	Alternative II-B Soil Excavation to Residential PRGs and ESLs, and Landfill Disposal	Alternative III Capping, with Institutional Controls
Availability	Alternative I is readily available.	Alternatives II-A, II-B, and III utilize services, equipment, materials, and labor that are readily available. There are no significant distinguishing features between alternatives for this subcriterion.	Alternatives II-A, II-B, and III utilize services, equipment, materials, and labor that are readily available. There are no significant distinguishing features between alternatives for this subcriterion.	Alternatives II-A, II-B, and III utilize services, equipment, materials, and labor that are readily available. There are no significant distinguishing features between alternatives for this subcriterion.
Administrative Feasibility	Alternative I does not prevent infiltration of water through impacted soils into groundwater or protect human health and is therefore not expected to foster community or regulatory support.	Alternative II-A is likely to be accepted by agencies with permitting and approval authority. Alternatives II-A and III, however, would require the adoption of land use controls, which may not be acceptable to the City of Hayward, which is the owner of the property.	Alternative II-B is likely to be accepted by agencies with permitting and approval authority.	Alternative III is likely to be accepted by agencies with permitting and approval authority. Alternatives II-A and III, however, would require the adoption of land use controls, which may not be acceptable to the City of Hayward, which is the owner of the property.
Relative Cost Comparison	No Cost	$165,000	$181,000	$398,000

Abbreviations:

ESL = Environmental Screening Level, for the following conditions: surface soil; residential land use; and groundwater is a potential drinking water sour

PRG = Preliminary Remediation Goal, 2004

6.1 Effectiveness

6.1.1 Ability to Achieve Removal Action Objectives

As discussed in Section 5.1.1, four RAOs have been developed for the remedial action::

- Prevent human exposure to COCs that exceed acceptable concentrations;
- Reduce the potential for migration (through soil erosion) of the COCs, further reducing the risk to human health and the environment;
- Reduce the potential for leaching of COCs into the groundwater; and
- Allow for continued industrial use of the land.

Alternative I (No Action) does not fulfill any of the four RAOs.

Alternative II-A meets the RAOs.

Alternative II-B exceeds the RAOs by making the site suitable for all uses, eliminating the potential for migration (through soil erosion) of the COCs, and eliminating the potential for leaching of COCs into the groundwater.

Alternative III has been shown to be technically infeasible for two of the three sites, but meets the RAOs for the third site (AOC J).

6.1.2 Overall Protection of Human Health and the Environment

Alternative I is not protective of human health and the environment, and Alternative III is only protective for one site (AOC J).

Alternative II-B is more effective than Alternative II-A in protecting human health and the environment because all impacted soils greater than residential PRGs and ESLs are removed from the site; therefore, no soils would remain that could potentially impact groundwater or present a risk of human exposure.

Under Alternatives II-A and II-B, there is a short-term potential for worker exposure during soil excavation and for public exposure during off-site transportation of soils. However, mitigation measures and monitoring to

ensure effectiveness of the mitigation measures will significantly reduce the potential risk to human health.

6.1.3 Reduction Of Toxicity, Mobility Or Volume

None of the alternatives reduce the inherent toxicity of the contamination, as soil treatment is not proposed.

Alternative I does not reduce the mobility of contaminants or the volume. Alternatives II-A and II-B result in an increased volume of material due to the expansion phenomenon associated with excavation and handling of soils, but significantly decrease the mobility of contaminants by placement of the materials in a controlled environment (i.e., a landfill). Alternative III reduces the mobility of contaminants by virtue of the placement of a cover over the wastes. Although the volume of waste under this alternative does not change, the volume of material required to manage the contaminated soil rises significantly by the use of a one-foot-thick cover.

On balance, control of contaminant mobility is greatest for Alternative II-B, which provides for off-site disposal of the greatest amount of contaminants.

6.1.4 Short- and Long-Term Effectiveness, and Permanence

Alternative I achieves neither short- nor long-term effectiveness, and is not a permanent solution.

Alternatives II-A, II-B and III have the potential to result in exposures in the short-term (during construction), and that risk is greatest for Alternatives II-A and II-B, which involve excavation and off-site disposal of contaminants. However, mitigation measures to be implemented during construction will significantly reduce these risks.

Following implementation of the selected interim remedial alternative, conditions at Site 7, and AOCs J and K will need to be reassessed for long-term effectiveness as part of the RI/FS, and a final remedy will be selected in a Remedial Action Plan. However, Alternative II-B is most likely to be consistent with the final remedy due to the removal of all wastes that could present a threat to human health or groundwater.

6.1.5 Compliance with ARARs

All the alternatives would be conducted in accordance with the ARARs identified in Table 3-2.

6.2 Implementability

6.2.1 Technical and Administrative Feasibility

For the technical feasibility subcriterion, Alternative I is the most technically feasible since no actions are required. Alternatives II-A and II-B are both technically feasible, although Alternative II-A requires greater resources over the long-term due to monitoring and maintenance. Alternative III is technically infeasible for AOC K due to concerns about access to and maintenance of the transformer, flooding, and the proximity of the site to the ANG leasehold boundaries. Alternative III is also technically infeasible for ERP Site 7, primarily due to its proximity to the ANG leasehold boundary.

The efforts associated with paving the site and future operation and maintenance of the cap make Alternative III more difficult to implement than Alternatives II-A and II-B. Alternative II-A and Alternative II-B are nearly identical to implement; however, Alternative II-B removes COCs above the residential PRGs and ESLs at the sites.

For the administrative feasibility subcriterion, there are significant differences between the alternatives. Alternative I presents no administrative obstacles. Alternatives II-A and II-B involve encroachment on trees, for which permits will be required from the City of Hayward. Alternatives II-A and III would require the City of Hayward (as property owner) to place land use restrictions on the property and to enter into a Land Use Covenant with DTSC to enforce those restrictions. The City has not indicated it is willing to impose those restrictions or enter into a LUC, so Alternatives II-A and III are not administratively feasible. Alternative II-B does not leave any residual contaminants behind at levels that present a threat to human health, so there is no need for deed restrictions or a LUC for Alternative II-B.

Alternative II-B is the only alternative that meets the RAOs and is administratively feasible.

6.2.2 Availability of Materials and Sources

For the availability subcriterion, each of the four alternatives is rated equally. Alternative I requires no action and is, therefore, readily available. Alternatives II-A, II-B, and III utilize services, equipment, materials, and labor that are readily available. There are no significant distinguishing features between alternatives for this subcriterion.

6.2.3 Regulatory Acceptance

The RWQCB and DTSC hereby determine, based on the substantial evidence in the administrative record, that this RAW has been properly noticed, circulated for public review and comment, and approved in accordance with the requirements of Sections 25356.1 and 25356.1.5 of the Health and Safety Code, Chapter 6.8 of Division 20, the Porter Cologne Water Quality Control Act, and all other applicable State laws.

6.2.4 Community Acceptance

Community acceptance refers to the public's general response to the alternatives described in the RAW. The community will have the opportunity to comment in writing on the RAW during the 30-day comment period. Depending on the level of interest, there may also be a meeting during the public comment period where the ANG, DTSC, and the RWQCB will present the proposed removal action, and provide the public with an opportunity ask questions and make comments.

6.3 Cost

The estimated costs for each of the alternatives involving remediation are detailed in Tables 5-1 through 5-3 and summarized in Table 6-1. Costs range from $138,000 for alternative II-A, to $371,000 for alternative III. The differences in costs for these three alternatives are not significant, so cost is not a major consideration in the selection of an alternative.

SECTION 7.0

RECOMMENDED REMOVAL ACTION ALTERNATIVE

As discussed in Section 3.1, the objectives of the proposed removal action are:

- Reduce the potential for human exposure to COCs that exceed acceptable concentrations;
- Reduce the potential for migration (through soil erosion) of the COCs, further reducing the risk to human health and the environment;
- Reduce the potential for leaching of COCs into the groundwater; and
- Allow for continued industrial use of the land.

The comparative analysis of the four removal action alternatives presented in Section 6.0 indicates that Alternative II-B is the preferred alternative.

Alternative II-B is the most practical approach for the small volume of soil requiring remediation. Alternative II-B is rapid to implement and will meet or exceed the remedial action objectives. With no operation and maintenance requirements, Alternative II-B is supportive of site reuse under all conditions, including commercial/industrial and residential.

The following sections document the procedures that will be used during implementation of the selected soil removal action alternative.

SECTION 8.0

ORGANIZATION AND RESPONSIBILITIES

8.1 Quality Control Organization

The project will be managed and executed by personnel who will ensure that the RAW objectives are met. The soil excavation and disposal, transformer removal and disposal, analytical services, and surveying support will be provided by experienced subcontractor firms that possess the required permits, licenses, and accreditations necessary to work in California.

The project team will consist of the key positions described below.

Program Manager: The Program Manager is responsible for the overall execution of this project and for maintaining an open line of communication with the ANG Project Manager.

Project Manager: The Project Manager will directly supervise the project team; provide technical direction and interface with ANG/CEVR, DTSC, and RWQCB; direct field operations; monitor quality control (QC); and coordinate contractor and subcontractor support.

Construction and Site Manager: The Construction and Site Manager is assigned when the Project Manager is not on site. The Site Manager will be responsible for on-site health and safety, directly supervising the removal action, and providing technical direction and technical interface with the Project Manager.

Safety and Health Manager: The Safety and Health Manager will be responsible for ensuring that physical and chemical hazards are appropriately mitigated through effective execution of the HASP.

Project Scientists and Engineers: This group includes qualified geologists, engineers, and chemists. All personnel anticipated to work at the Station will have the requisite education and/or experience.

8.2 Project Procedures

An open line of communication will be maintained between the ERM Project Manager, the ANG/CEVR Project Manager, the DTSC Project Manager, and the RWQCB Project Manager. The ERM Project Manager will communicate with the project team to ensure that all of the objectives are met. All construction and sampling activities will be performed in accordance with this RAW. The overall removal action will be executed within the time frame of the planned project schedule included in this RAW.

8.3 Quality Management

The Project Manager will also be responsible for QC functions during execution of the project. QC responsibilities include oversight and verification that the project is being conducted in accordance with applicable quality criteria, and ERM requirements.

8.4 Subcontractor Management

ERM is responsible for the performance of all work under this RAW, including the work of subcontractors. ERM will hire subcontractors for excavation, transportation, disposal, analytical services, and surveying support. ERM's Construction/Site Manager will maintain oversight of the subcontractors' completion of specified tasks with respect to technical performance, quality, and adherence to cost and schedule.

All subcontractor activity will be in compliance with the applicable HASP (ERM, 2004b). ERM's subcontractors will be notified of, and will agree to, the responsibility of implementing the HASP.

SECTION 9.0

CONSTRUCTION MANAGEMENT PLAN

9.1 Purpose

This Construction Management Plan defines the methodology and standard practices to control the quality of work performed at the Station during the excavation activities specified in this RAW.

9.2 Scope of Work Activities

The removal will be conducted in a phased approach to meet the RAOs at ERP Site 7 and AOCs J and K. The following general activities will be performed at each location, as applicable:

- Mobilization, site security, and general site preparation;
- Excavation of impacted soil;
- Confirmation sampling;
- Backfilling and restoration of excavated areas;
- Storm water pollution prevention; and
- Transportation of soil to disposal facility.

9.2.1 Mobilization and General Site Preparation

All labor, materials, subcontractors, and equipment necessary to perform the work will be coordinated by the Construction/Site Manager and will be on site and in place in a timely manner in order to support the project schedule. A project kickoff meeting will be held with the project team, including all subcontractors, to review the RAW, safety, work procedures, and QC.

General site preparation will include the implementation of site security measures; utility clearances; delineating the work areas, including soil storage; placement of storm water pollution prevention measures; and procurement of subcontractors and materials. ANG personnel control site security. Station ingress and egress methods will be coordinated with ANG personnel. Location-specific controls will be established around the soil removal and transformer areas. These will include temporary barriers, fences, and "No Admittance" signage delineating the work area.

9.2.2 Excavation of Impacted Soil

Conventional excavation equipment will be used to remove the impacted soil from the three sites. Excavation will be performed with a combination of hand tools and excavation machinery, whichever is appropriate to the site conditions. All excavated soil will be temporarily stored on plastic sheeting and covered adjacent to each of the affected sites. No soil will be stored on or near any existing storm drain structures. Anticipated locations for soil staging are shown in Figure 9-1. These locations will be confirmed during the project kickoff meeting to be held at the site on the first day of the removal action. The soil staging locations determined during the meeting will not change unless express consent is granted by the ANG. In the event that further excavation is required, stockpiled soil will be transported for off-site disposal prior to the resumption of excavation activities.

9.2.3 Confirmation Sampling

Excavations will be implemented such that impacted soil is removed up to the initial excavation limits represented in Section 11.0. Upon reaching these initial excavation limits, the confirmation sampling procedures set forth in Section 11.2 will be implemented. The results of the confirmation sampling will determine whether further excavation is required (re-excavate, followed by additional confirmation sampling) or if excavation work can be terminated.

9.2.4 Backfilling and Restoration of Excavated Areas

Following receipt and review of confirmation sampling analytical results showing that the excavations have met the cleanup criteria, excavated areas will be backfilled with "pit fines" from a hard rock aggregate mine (La Vista Mine) located about 4 miles from the ANG station. All excavated areas will be filled and compacted.

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Date: 07/29/04
Project No. 7505.31

Figure 9-1
Soil Stockpile Locations and Surface Water Flow
Hayward ANGS
Hayward, California

ERM 07/04

9.2.5 Storm Water Management

The Site is located in urban Hayward. The ground surface is relatively flat and consists primarily of asphaltic concrete, concrete, and soils with limited vegetation. Under current conditions, storm water runoff flows into City storm water drain inlets located throughout the Site, which drain to Sulphur Creek along the northern boundary of the HEA and then westward into San Francisco Bay. During all soil handling activities, potential sediment transport from the Site will be restricted through a combination of the following storm water best management practices:

- Control dust during soil handling activities;
- Decontaminate equipment before leaving an exclusion zone;
- Remove loose soil to stockpiles;
- Cover soil stockpiles with polyethylene sheeting daily;
- Protect City storm drain inlets with one, or a combination of, straw bales, silt fences, and gravel bag filters;
- Restrict sediment transport from the Site onto adjacent sidewalks and streets through grading techniques, silt fences, drainage ditches or straw bales, as needed.

9.2.6 Transportation of Wastes

The transformer to be removed and disposed of from AOC J will be packaged and shipped according to the waste acceptance criteria of a licensed disposal facility, as well as applicable U.S. Department of Transportation requirements for labeling and manifesting of hazardous material, including 49 CFR Parts 100-199, and State of California Department of Transportation requirements, including Ca-HSC Division 20, Chapter 6.5. Applicable State of California regulations regarding the disposal of hazardous materials as specified in CCR Division 4.5, Title 22 will also be followed. The public will be informed of transportation activities, as detailed in Section 15.1.

All excavated soil is expected to be Class II or III waste and will thus be transported by dump truck for off-site disposal at Waste Management's Altamont Landfill in Livermore, California. In the event waste is classified as hazardous, it will be transported to the Chemical Waste

Management Kettleman Hills Facility, Kettleman City, California, a Class I Disposal Facility. Concrete contaminated with PCBs or soils with greater than 50 parts per million PCBs would be handled and disposed of as hazardous debris. Trucks will have valid hauler licenses for the type of waste being hauled. Each truck will be covered with a well-secured tarp. Handling and transportation details are presented in the Materials and Residuals Handing Plan provided in Section 12.0.

SECTION 10.0

SITE PREPARATION PLAN

10.1 Site Security Plan

The ANG controls access to the Station through strict protocols. These protocols will be followed by all personnel implementing the removal action. ERP Site 7 and AOCs J and K will be secured with temporary barricades and signage. ANG security personnel will be informed of activities and will control access to the sites when ERM personnel are not present.

10.2 Permits and Notifications

All soil remediation work will be conducted in accordance with applicable local, State, and Federal regulations. The following permits and notifications are necessary for implementation of this work:

- Notification to Underground Service Alert for utility clearance within excavation areas;
- Grading permit from the City of Hayward; and
- Notification to the Bay Area Air Quality Management District (BAAQMD) as required by Section 8, Rule 40 of BAAQMD regulations.

10.3 Site Preparation at ERP Site 7

The following sections discuss the removal action site preparation activities at ERP Site 7. Procedures for soil excavation, materials handling, and backfilling are provided in subsequent sections of this RAW.

10.3.1 Tree Protection at ERP Site 7

According to City of Hayward Municipal Code Section 10 Article 15, trees having a minimum trunk diameter of 8 inches measured 54 inches above the ground surface are protected trees. If a protected tree is removed, it must be replaced with a like-kind or like-sized tree. If a similar tree is not available, a valuation of the protected tree will be used to determine the number and size of trees required to replace the protected tree.

A portion of the proposed excavation area in ERP Site 7 is beneath the dripline of an existing tree located just beyond the ANG leasehold. If the tree at ERP Site 7 is removed, City of Hayward Regulations require its replacement with a tree or trees of equal value.

10.3.2 Preparations for Excavation at ERP Site 7

Aluminum matting (AM-2) is currently located in the northern end of the proposed excavation area in ERP Site 7. The matting will be cleaned, using dry methods, within the area to be excavated. The soil generated from the cleaning will be left in the area to be excavated. The mats will then be relocated to the asphalted surface immediately south of ERP Site 7. The AM-2 will be neatly stacked no more than 2 feet high. It will also be spaced to allow easy access for future use.

After removing the matting, an exclusion zone will be delineated using caution tape and temporary fence posts. The existing fence will remain in place during excavation. Consideration will be made to not damage the fence during excavation activities. If the existing fence is damaged during excavation activities, temporary fence materials will be immediately installed across the affected areas. After excavation and backfill activities have been completed, new fence materials of like size and composition will be installed to complete permanent repairs. Damaged fence materials will be disposed of off-site. Excavations will not proceed past the fence line.

10.4 Site Preparation at AOC J

The following sections discuss the removal action site preparation activities at AOC J.

10.4.1 Tree Protection at AOC J

A portion of the proposed excavation area in AOC J is beneath the dripline of an existing tree. The excavation limits will be delineated and the trunk of the tree will be covered with orange fencing to minimize impacts to the tree. As described in Section 10.3.1, if the tree at AOC J is removed, City of Hayward Regulations would require its replacement with a tree or trees of equal value.

10.4.2 Transformer Removal at AOC J

The manufacturer's name plate on the electrical transformer and switchgear (transformer) state that the equipment is non-PCB, containing less than one part per million of PCBs. Because the concentration of PCBs is less than 50 parts per million, the transformer will be shipped as-is for disposal. All transportation and disposal will be performed in accordance with the Materials and Residuals Handling Plan (Section 12.0) and applicable State and Federal regulations.

10.4.3 Excavation Preparations at AOC J

The existing fence at AOC J will be removed and disposed of to allow for the removal of the transformer. An exclusion zone will be delineated using caution tape and temporary fence posts. After the transformer has been removed from the pad, the pad will be broken in place. The demolished concrete will be profiled as required by the disposal facility, and properly disposed of off site.

10.5 Site Preparation at AOC K

At AOC K, an exclusion zone will be delineated using caution tape and temporary fence posts. The existing fence and transformer will remain in place. Consideration will be made to not damage the fence during excavation activities. If the existing fence is damaged during excavation activities, temporary fence materials will be immediately installed across the affected areas. After excavation and backfill activities have been completed, new fence materials of like size and composition will be installed to complete permanent repairs. Damaged fence materials will be disposed of off site.

SECTION 11.0

EXCAVATION PLAN

After performing the site preparation activities indicated in Section 10.0, implementation of soil remediation can occur. In general, the excavation of the soil consists of the following three steps:

1. Mobilize equipment and personnel.

2. Excavate soil up to the initial excavation limits.

3. Perform confirmation sampling and/or re-excavation until remedial goals are satisfied.

The following subsections detail the steps and activities that will be performed during implementation of this soil removal action. The procedures required for stockpiling and transport of excavated materials are described in Section 12.0

11.1 Soil Excavation and Stockpile

11.1.1 Utility Clearance of Excavation Areas

A utilities search to locate facilities such as water supply lines, storm water lines, sewer lines, electrical lines, and telecommunication will be performed prior to initiating remediation efforts. Each excavation area will be reviewed by a private, licensed underground utility locating contractor and on-site ANG personnel.

11.1.2 Soil Excavation

All three proposed excavation areas will initially be excavated to a depth of 1 foot. Because the depth to first encountered groundwater at the Hayward ANG Station is typically between 8 and 10 feet below ground surface, excavating to a depth of 1 foot is not expected to encounter groundwater. The approximate lateral extents of the proposed excavations are shown in Figures 2-1 through 2-3. After soil has been

removed from each area, cleanup confirmation samples will be collected from the resulting excavation bottom and sides, and will be analyzed at an approved laboratory on a standard turnaround time period.

If confirmation soil sampling results exceed remedial goals, then equipment will be re-mobilized to the Station and additional soil excavation will be performed. This process will be repeated until all samples show that contamination above the remedial goals has been removed.

11.1.3 Soil Stockpile

All soil excavated and removed from each of the AOCs will be immediately placed on a minimum of 6-mil polyethylene sheeting. All stockpiled soil will be covered and the piles will be secured at the end of each day's work. The plastic will be secured to prevent rainfall or other water from contacting the soils, either directly or due to run-on from surrounding areas.

11.2 Excavation Confirmation Sampling

The objective of the confirmation sampling is to evaluate the lateral and vertical extent of excavation necessary to accomplish the remedial goals. Soil confirmation samples will be collected to evaluate whether soil adjacent to excavations and on excavation floor bottoms and sides has been impacted by COCs at concentrations greater than the established cleanup goals for the site. Cleanup levels required for soil are presented in Table 3-1.

11.2.1 Excavation Confirmation Sampling Frequency

Once soil is removed to the specifications provided in the RAW, confirmation sampling will be performed at the excavation floor and sidewalls to determine whether impacted soil has been removed to meet the cleanup goals.

For ERP Site 7, confirmation sampling of the excavation floor and sidewalls will be performed at approximately 50-foot spacings. Ten excavation floor samples and 13 sidewall samples will be collected. Proposed sampling locations in ERP Site 7 are illustrated on Figure 11-1. The grid and discrete sampling locations will be staked, photo-documented, and surveyed.

For AOCs J and K, confirmation samples will be collected from each excavation floor and sidewall. Three excavation floor samples and four sidewall samples will be collected in AOC J. In AOC K, three excavation floor samples and eight sidewall samples will be collected. In both AOCs J and K, sidewall samples will be collected near the ground surface, as that is where impacted soil is more likely to be located. Proposed sampling locations in AOCs J and K are illustrated on Figures 11-2 and 11-3.

11.2.2 Excavation Confirmation Sampling Methods

Samples will be collected from the floor and sidewalls of excavations by manually pushing pre-cleaned brass or stainless steel liners by hand into the soil or using a steel corer sampler with pre-cleaned brass or stainless steel liner(s) attached to an extension rod with a slide hammer apparatus.

Each excavation confirmation sample will be assigned a unique sample identification that will include the excavation designation and sample location that will link it with a particular excavation. Sampling locations will be staked, photo-documented, and surveyed.

11.2.3 Confirmation Sampling Analysis

Discrete soil samples collected from ERP Site 7 will be analyzed for the following:

- Priority Pollutant Metals using USEPA Method 6010B;
- TPH-D using USEPA Method 8015 Modified; and
- PAHs using USEPA Method 8270.

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Date: 11/03/04
Project No. 0020540.32

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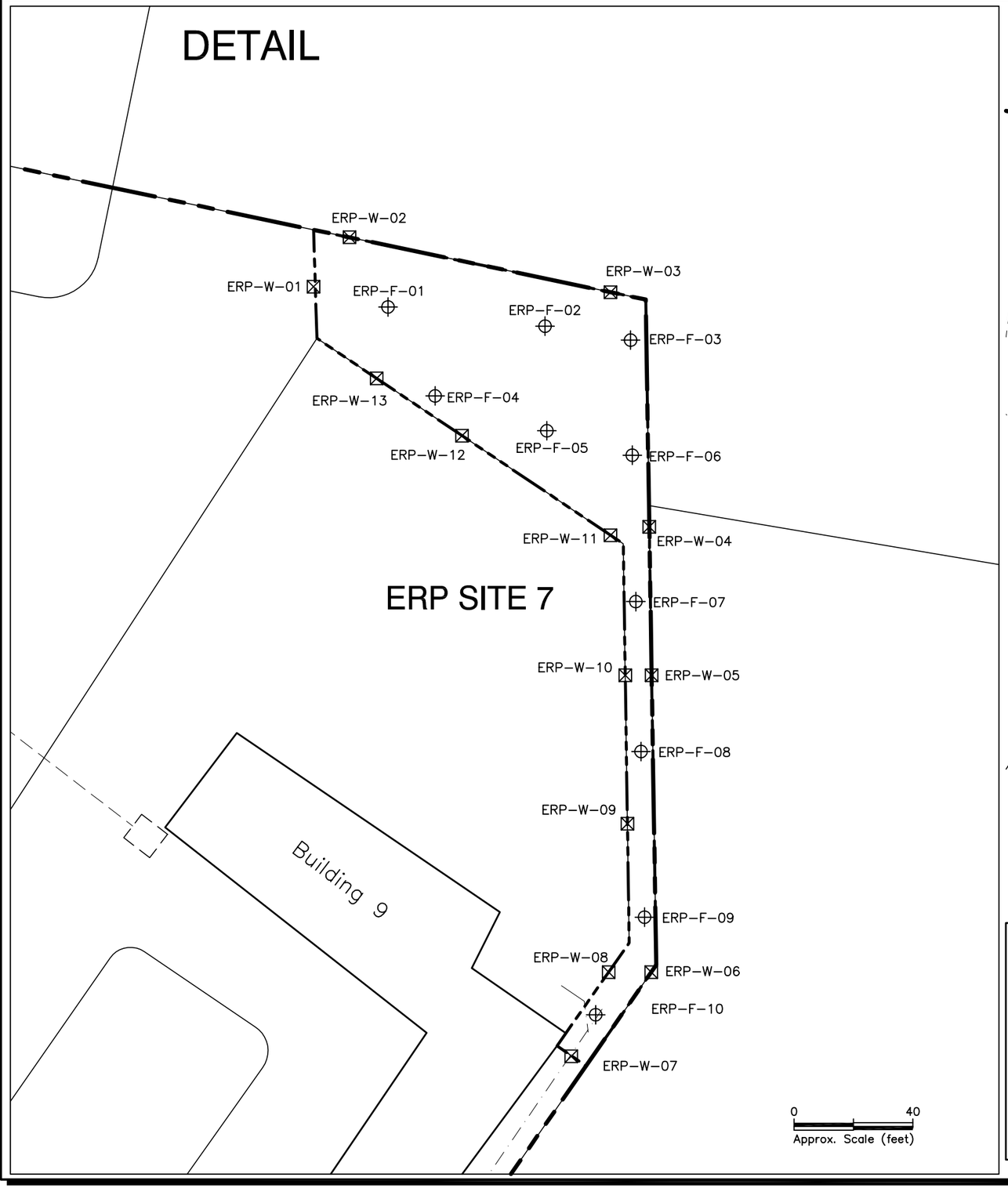

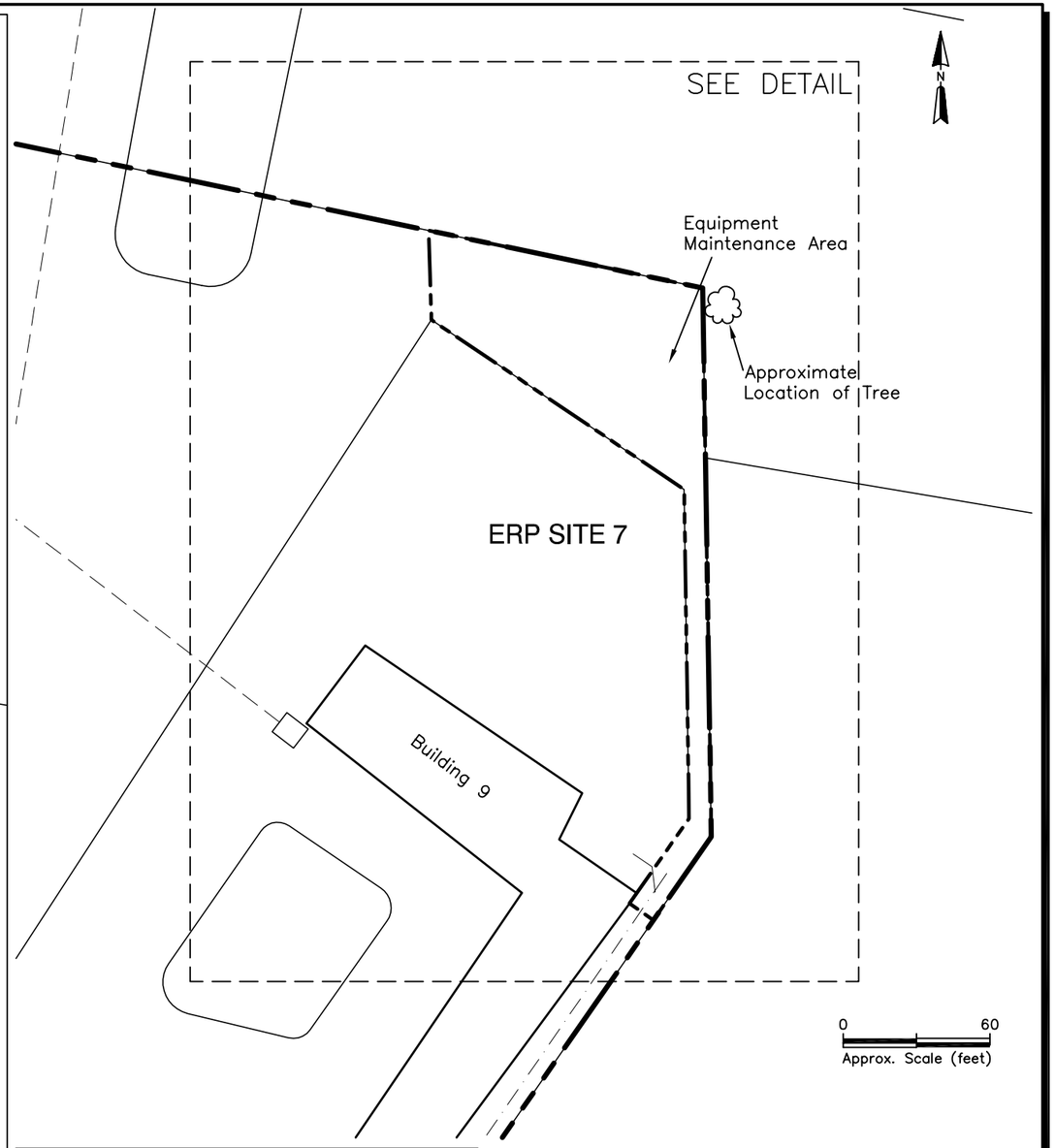

LEGEND

- Excavation Sidewall Confirmation Soil Sample
- Excavation Floor Confirmation Soil Sample
- Station Boundary
- ERP Site Boundary
  Proposed Excavation Limits (8,267 ft^2)
- Sanitary Sewer Drain Line
- Storm Drain Line

Figure 11-1
Proposed Confirmation Sampling Locations
ERP Site 7
Hayward ANGS
Hayward, California

ERM 11/04

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Date: 11/03/04
Project No. 0020540.32

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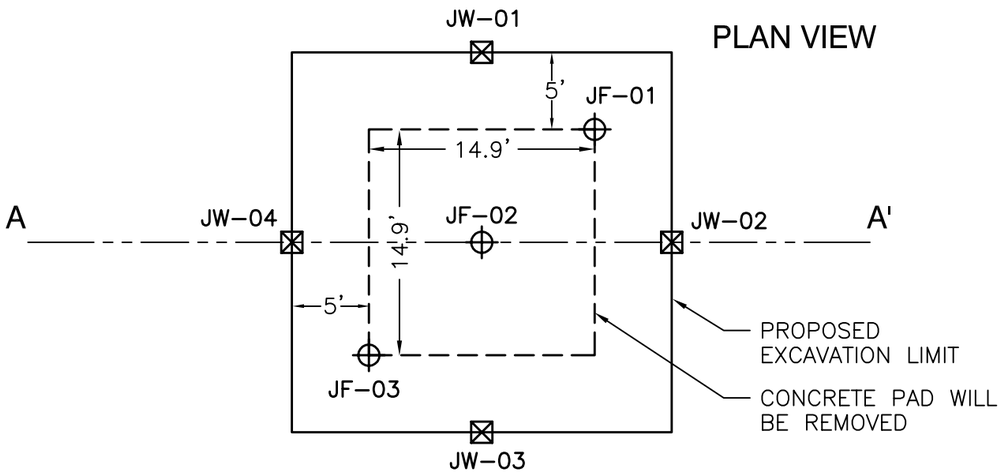
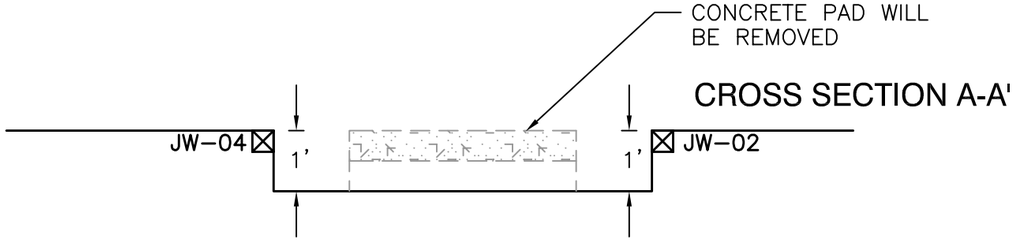
AOC J

PLAN VIEW



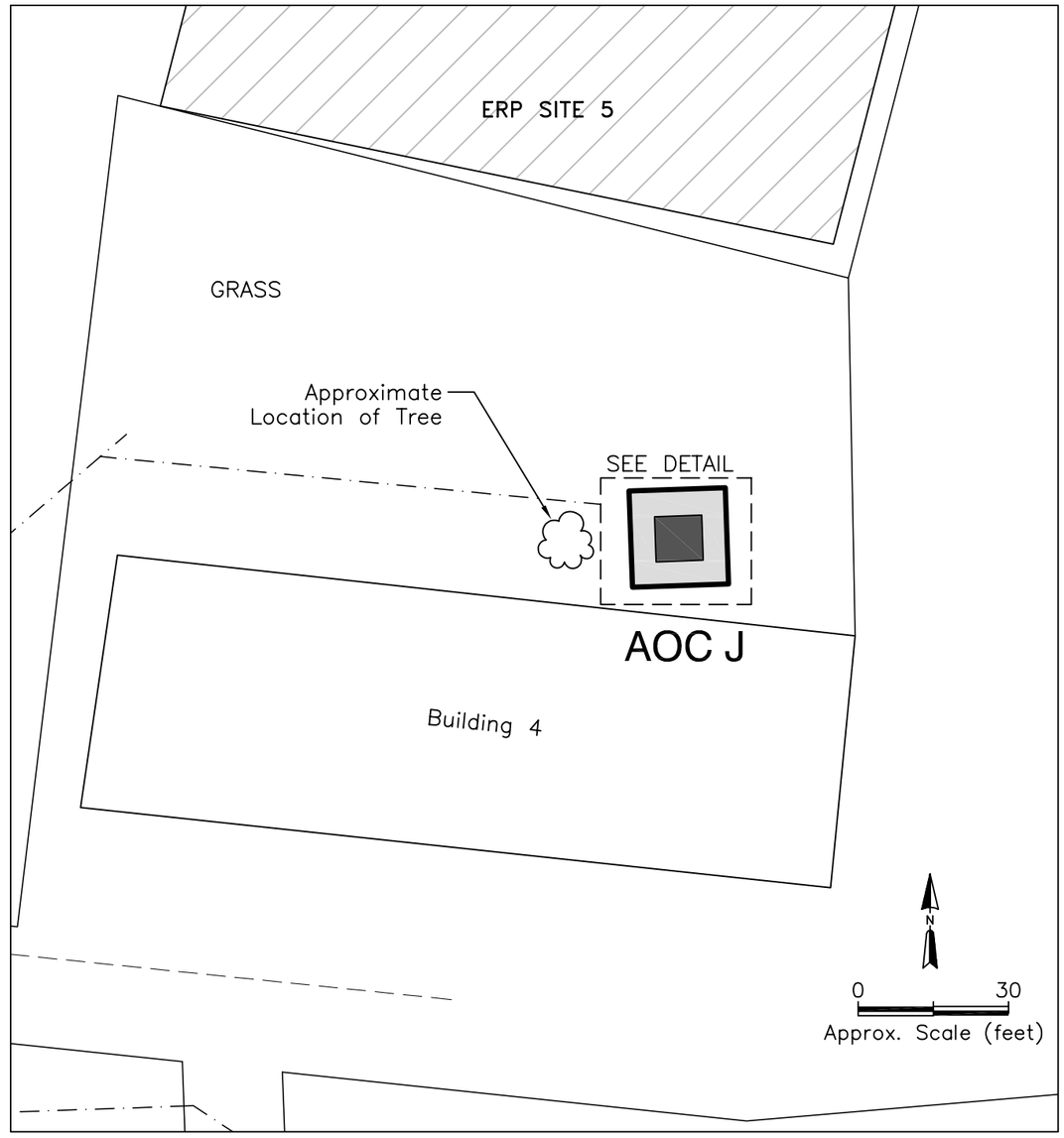
CROSS SECTION A-A'



EXCAVATION SIDEWALL CONFIRMATION SOIL SAMPLE

EXCAVATION FLOOR CONFIRMATION SOIL SAMPLE

0 10
Approx. Scale (feet)



LEGEND

- AOC J — Area of Concern Proposed Excavation Limits (405 ft²)
- Approximate Location of Former Transformer Pad
- ERP Site
- Sanitary Sewer Drain Line
- Storm Drain Line

Figure 11-2
Proposed Confirmation Sampling Locations
AOC J
Hayward ANGS
Hayward, California

ERM 11/04

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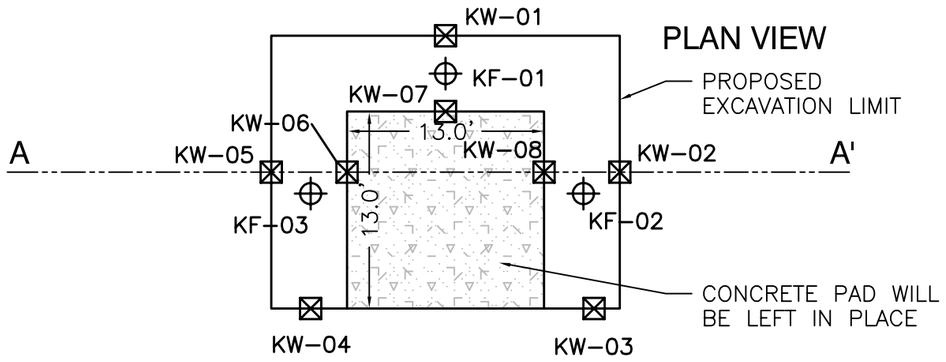
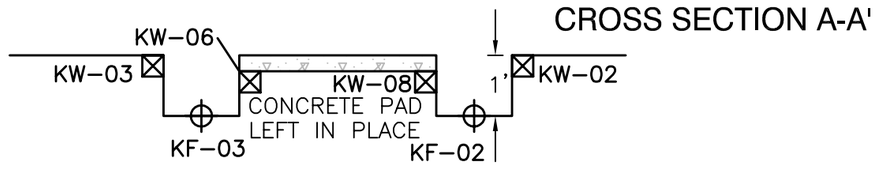
Date: 11/17/04
Project No. 0020540.32

DETAIL

AOC K





EXCAVATION SIDEWALL CONFIRMATION SOIL SAMPLE

EXCAVATION FLOOR CONFIRMATION SOIL SAMPLE

0 10
Approx. Scale (feet)

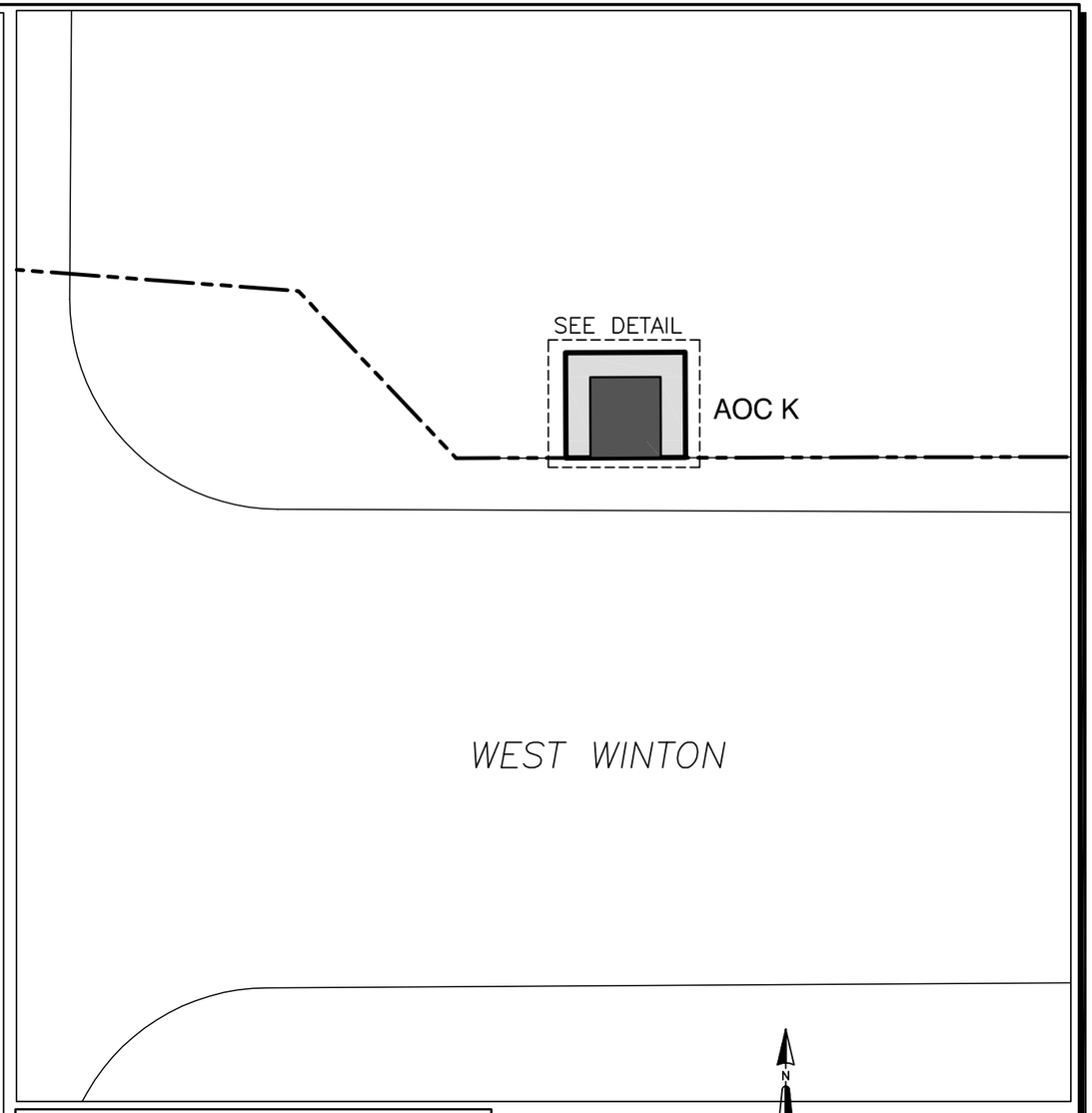


Figure 11-3
Proposed Confirmation Sampling Locations
AOC K
Hayward ANGS
Hayward, California

ERM 11/04

Discrete soil samples collected from AOC J will be analyzed for the following:

- PCBs using USEPA Method 8082;
- TPH-D using USEPA Method 8015 Modified; and
- Pesticides using USEPA Method 8081.

Discrete soil samples collected from AOC K will be analyzed for the following:

- PCBs using USEPA Method 8082; and
- TPH-D using USEPA Method 8015 Modified.

The results of the confirmation sampling will determine if further excavation is required (re-excavate, followed by additional confirmation sampling) or if excavation work can be terminated.

SECTION 12.0

MATERIALS AND RESIDUALS HANDLING PLAN

In conjunction with excavation activities described in Section 11.0, this Materials and Residuals Handling Plan outlines a program for both on- and off-site transport of materials derived from remedial activities. In general, the excavation of the soil consists of the following three steps:

1. Stockpile excavated soil into 100-cubic-yard (maximum) temporary stockpiles.
2. Characterize each 100-cubic-yard temporary stockpile.
3. Load stockpiled soil into end-dump trucks for transport and off-site disposal.

The purpose of this plan is to manage potential health, safety, and environmental risks resulting from on- and off-site movement of materials, equipment, and debris associated with removal action activities.

12.1 On-Site Material Staging

This section presents measures that will minimize the potential health, safety, and environmental risks associated with the on-site transport of materials generated during site remediation.

12.1.1 Characteristics of Materials to be Staged

Waste and construction debris generated and handled throughout this project will include:

- Soil;
- Concrete; and
- An electrical transformer containing transformer oil.

These materials may be impacted by metals, TPH, PCBs, and PAHs. Based on the investigation results presented in the SI Addendum Report

(ERM, 2004a), it is anticipated that soil removed from the three sites to residential PRGs would likely be classified as "non-hazardous" or "designated" waste and may be disposed of at a Class II, or possibly a Class III, landfill. There are no results that identify the waste as Resource Conservation and Recovery Act (RCRA) hazardous waste or Toxic Substances Control Act (TSCA) waste. Approximately 331 cubic yards of soil and debris will be initially excavated during site remediation.

12.1.2 Staging of Waste Material

Excavated material will be stockpiled in a maximum of 100-cubic-yard piles on plastic sheeting. These piles will be covered for protection from the elements, as well as to minimize the possibility of storm water runoff. Waste handling will be performed in accordance with the Spill Prevention Plan in Appendix A. All excavated material will be sampled for characterization to determine its final disposition.

Soil will be held in temporary stockpiles near each of the AOC locations, as shown on Figure 9-1. A staging area for off-site truck transport will be determined at the on-site, pre-construction, kickoff meeting. From the stockpiles, the material will be transported off site for disposal at an appropriate facility. No excavated soil will be used as fill at the site.

The transformer will be staged away from storm drains and ditches until being loaded for transportation and disposal.

12.1.3 Dust Monitoring and Dust Control

During all soil handling activities, dust monitoring and dust control measures will be implemented to protect on-site workers and the immediate public.

12.1.3.1 Perimeter Dust Monitoring

Dust monitoring, using direct-read instruments, will be used during excavation, stockpiling, and loading activities to document the implementation of proper dust controls throughout the remediation activities for on-site worker and public safety. The air monitoring will satisfy the BAAQMD Visible Particle Regulation 6 Rule 305, which states that "A person shall not emit particles from any operation in sufficient number to cause annoyance to another person… This Section shall only

apply if such particles fall on real property other than that of the person responsible for the emission."

For this project, dust monitoring will include breathing zone monitoring and perimeter air monitoring. Because of their ability to provide real-time data, direct-read instruments will be used to monitor the air for total suspended particulates (TSP) throughout the remediation activities. Specifically, Personal DataRAMs with a detection limit of 0.001 milligrams per cubic meter (mg/m^3) will be used to monitor TSP concentrations in air. All direct-read instruments will be calibrated according to manufacturers' instructions prior to each day's use.

Direct-read instruments will be used for monitoring TSP during soil handling activities. TSP levels will be measured at perimeter monitoring points prior to commencing earthwork to determine background concentrations. Perimeter monitoring of TSP will occur every 2 hours during periods when excavation and loading is occurring. The measurements and their approximate locations will be documented. If fugitive dust concentrations at the Station perimeter exceed 0.2 mg/m^3 of air, the dust control measures will be evaluated and modified to immediately reduce fugitive dust.

A Personal DataRAM will be used to analyze total dust concentrations every 2 hours in the workers' breathing zones within the exclusion zone. Based on the results of the air monitoring, the HASP will indicate if an increase or a decrease in worker personal protective equipment (PPE) is necessary or if engineering controls need to be implemented for on-site worker safety.

12.1.3.2 Dust Control

Dust control procedures for earthwork construction will be implemented to satisfy the BAAQMD Visible Particle Regulation 6 Rule 301. The dust control procedure for stockpiles will be to apply water with a sprayer on a water truck, with or without a tackifier additive, to the stockpiles. During loading of soil into trucks, dust control measures will include actively spraying soil with water. If water alone is not sufficient to control dust, a dust suppressant will be added to the dust-control water.

12.1.4 Stockpile Sampling

Samples will be collected from stockpiles using the confirmation sampling procedures described in Section 11.2. Each stockpile sample will be

assigned a unique sample identification that will link the sample with a particular stockpile and excavation source. Each stockpile will be characterized with the collection of one four-point composite sample. Stockpile samples will be analyzed for the COCs identified in the original excavation.

12.1.5 Transportation

Material will be transported on site using appropriate equipment, which may include loaders and/or backhoes and forklifts. Operators will have the appropriate training related to hauling these materials based on OSHA and on any additional requirements in the project HASP.

During on-site staging, spillage of soil will be minimized by not overloading loaders or backhoes, and by grading loading areas smooth. Dust will be controlled with water, if needed. Equipment will be decontaminated, as necessary, prior to being demobilized from each of the excavation locations and prior to leaving the site. A dry decontamination procedure will be employed. If necessary, a fine water mist will be used to minimize the generation of dust during equipment decontamination. The decontamination process will comply with the BAAQMD's regulations associated with dust-producing actions, as specified in Table 3-2. Wastes generated during the dry decontamination of equipment will be disposed of along with the excavated soil.

If conditions change, such as inclement weather, requiring the use of water to decontaminate equipment, a temporary decontamination pad will be constructed with heavy plastic sheeting. If water is generated from washing of heavy equipment, it will be pumped into drums, characterized, and properly disposed of off site. Materials used to construct the decontamination area will be transported to the same facility as the excavated soil for proper disposal.

12.2 Off-Site Transportation

This section presents measures and information that will minimize the potential health, safety, and environmental risks associated with the off-site transport of material generated during site remediation.

12.2.1 Destination of Waste Material

Soil generated during site remediation is anticipated to be transported to the Waste Management Altamont Landfill in Livermore, California. The material transported to this facility will be characterized as described in Section 12.1.4, and disposed of in accordance with the facility's permit and operating procedures.

The transformer and transformer oil will be transported and disposed of at Trans-Cycle Industries, Inc., located in Pell City, Alabama. Trans-Cycle is a fully licensed and permitted facility that specializes in the acceptance and processing/destruction of electrical equipment. Trans-Cycle's EPA ID number for waste transportation and disposal is ALD983167891.

12.2.2 Transportation

All soil and debris/impacted material excavated as part of this remedial action will be transported by dump truck off site for direct disposal. Upon the approval of the disposal facility, wastes will be combined for transportation. Only trucks with valid hauler licenses will be used. All loads will be covered with a well-secured tarp before leaving the site.

Trucks transporting soil for disposal will:

- Depart the facility Station, turning left onto West Winton Avenue;
- Merge onto I-880 North;
- Merge onto I-238 South toward I-580 East;
- I-238 South becomes I-580 East; and
- Exit Highway at North Greenville Road/Altamont Pass Road then proceed directly to Waste Management's, Altamont Pass Facility.

The transformer will be tightly wrapped in two layers of 10-mil visqueen sheeting and secured with duct tape. The transformer will be loaded onto a truck using a forklift. Due to the limited volume of oil contained in the transformer, secondary containment will not be necessary. The truck transporting the transformer, however, will be equipped with the appropriate spill containment equipment.

12.2.3 Route

After exiting the Hayward ANGS, trucks will pass through a commercial area within the City of Hayward for approximately 1 mile. Trucks will then travel interstate highways until reaching the access road to the landfill. The route to the soil and concrete debris disposal facility is detailed in the map provided in Figure 12-1.

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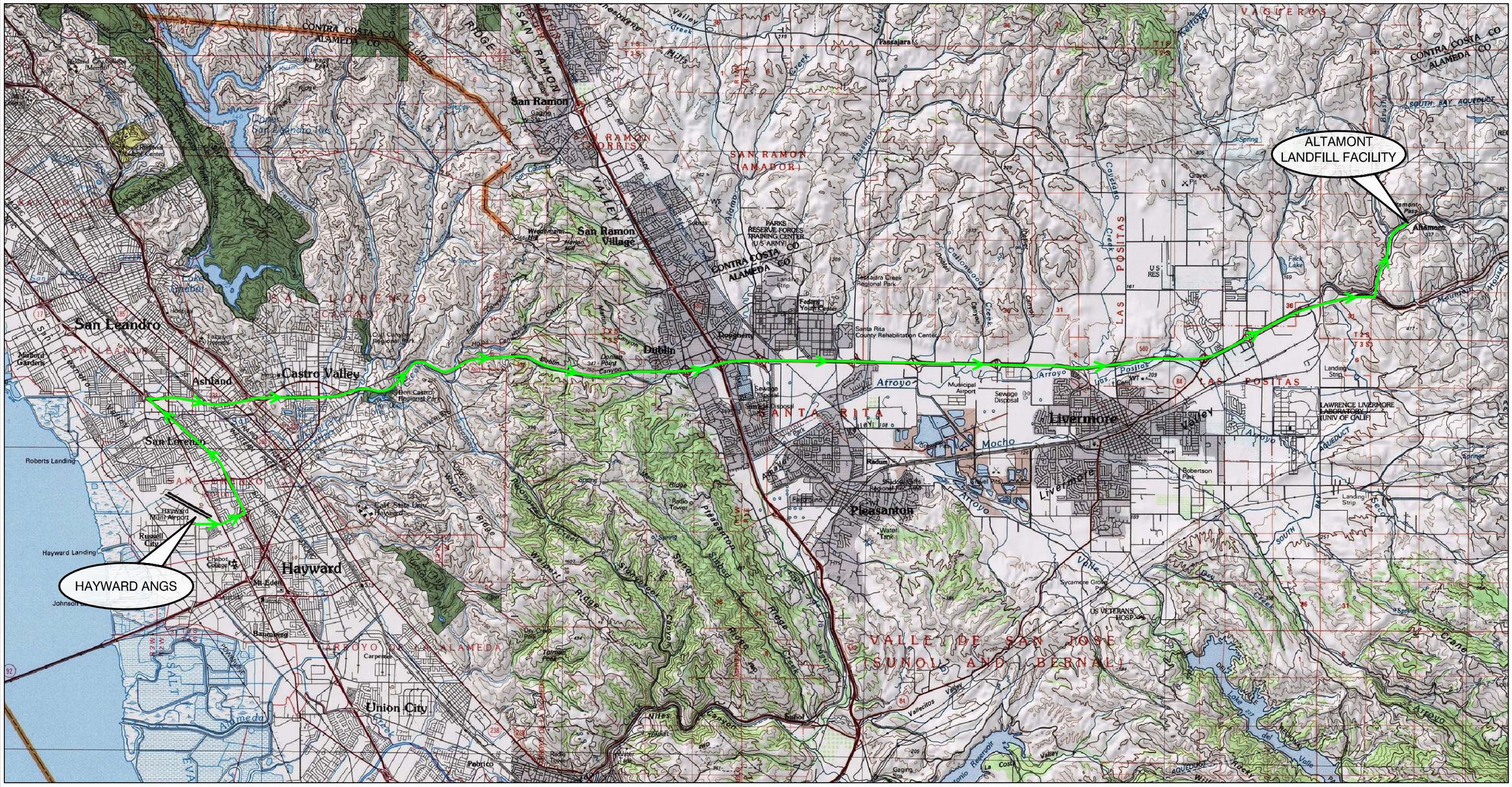

Directions from Hayward ANGS to the Altamont Landfill Facility:
- Go east on W. Winton Ave toward Clawiter Road
- Merge onto I-880 North toward Oakland
- Merge onto I-238 South toward I-580/CastroValley/Stockton
- I-238 South becomes I-580 East
- Take the exit toward North Greenville Rd/Altamont Pass Rd
- Turn Left onto Southfront Road
- Turn Left onto Greenville Road
- Turn Right onto Altamont Pass Road

N

1.0 0 2.0 4.0

1 INCH = 2 MILES

References:
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Figure 12-1

Route Map to the Altamont Landfill Facility
Hayward ANGS
Hayward, California

ERM 08/04

The transformer and transformer oil will follow the same route to the freeway and then will travel via truck to Pell City, Alabama, for disposal.

During off-site transport of the soil, it is estimated that a total of 26 truck trips will be required to transport the soil to the landfill. It is anticipated that 15 truckloads of soil will be transported to the landfill per day, allowing for completion of the loading and transportation of the soil in approximately 2 days. This estimate is based on the disposal of approximately 400 cubic yards of stockpiled soil. If additional soil is excavated, the number of truckloads will increase commensurately. The initial stockpiled soil will be transported from the site prior to any additional excavation. Any additional soil excavated will be stockpiled and transported off site as soon as possible.

One additional truck trip will be required to transport the transformer.

Trucks delivering soil to back-fill the sites will:

- Depart the facility on Mission Blvd in Hayward and proceed to Tennyson Road;
- Merge onto I-880 North;
- Exit I-880 at the West Winton Exit; and
- Proceed west to the Hayward ANG Station.

12.2.4 Traffic Control and Loading Procedures

The stockpiled waste will be placed into lined bulk transport vehicles (end-dump trucks). The appropriate manifests will be completed before leaving the site. After covering the loads and completing exterior decontamination, as described in Section 12.1.5, each truck driver will proceed over major surface streets to the nearest freeway access. Special traffic control procedures for traveling over surface streets are not anticipated for the following reasons:

- The soil disposal facility is easily located near major freeways and roadways.
- The transformer and transformer oil disposal facility is located in Pell City, Alabama. The same route will be used to enter major freeways as the soil disposal trucks.

- Surface streets between the site (West Winton Ave.) and the nearest controlled freeway (I-880) have adequate signals and signage to afford safe access. The remainder of the transportation route entails freeway travel.

- The majority of transport trucks will leave the site between the hours of 9:00 a.m. and 3:30 p.m. when surface street traffic is light to moderate.

The transporters will be licensed hazardous waste haulers, if necessary, and will provide appropriately trained and experienced drivers.

12.2.5 Recordkeeping

For material transported by truck to the disposal facilities, the driver will carry the appropriate Hazardous or Non-Hazardous Waste Manifest to the disposal facility. The ANG will sign all transportation manifests. ERM will also maintain copies of manifests, as well as a log listing the date and time of truck loading, type of material, weight of load, and vehicle identification for each load of material transported by truck. Drivers will operate their vehicles and respond to emergencies in accordance with the licensed waste hauler's Transportation Plan or equivalent document.

12.2.6 Health and Safety

Truck transportation personnel will not be involved with the loading of the materials into the trucks beyond staging trucks for loading. The remediation contractor, under the requirements of the project HASP, will undertake all loading activities. The materials associated with this remediation project are not acutely hazardous, so no special training (other than Tailgate Health and Safety Meetings) will be needed for truck transportation personnel.

12.2.7 Contingency Plan

The licensed waste truck haulers will have an emergency contingency program in place for all roadway shipments of hazardous materials. A summary of the general procedures for addressing an accidental release during truck shipment is presented below.

In the event of an accident, the truck driver or other first responder will assess the potential for immediate threat to workers and people nearby

and take appropriate corrective steps to rectify the problem and notify local emergency management agencies.

After identifying the problem (approximate size of spill, type of material spilled, potential immediate threat to human health or the environment), the first responder will notify the ERM Project Manager, the truck hauler's Manager, or Chemical Transportation Safety.

For contaminated material spilled onto the ground surface along a transportation route, cleanup would consist of excavation and disposal of the contaminated soil at the pre-designated disposal facility. All cleanup work will be done in accordance with a site-specific HASP and in cooperation with interested State and local agencies.

For accidental releases of contaminated material in or near a stream, river, or lake, the same general response procedures will apply, with particular emphasis on preventing the release of the spilled waste material into the water body. In the event of an actual release of contaminated material into a body of water, all work will be coordinated with State and local agencies to select practical and appropriate cleanup methods based on specific circumstances of the release.

SECTION 13.0

SITE RESTORATION PLAN

Excavations will be backfilled as promptly as the work permits but not until receipt of satisfactory confirmation samples from the analytical laboratory for excavations and imported soil. Excavations will be backfilled with imported soil consisting of native, fine-grained material mined from the Hayward hills.

13.1 Excavation Preparation

Upon completion of the excavations, roots or other debris protruding through the ground surface of the excavations will be removed. Mechanical grubbing equipment will not be used inside the drip lines of trees indicated to remain standing. As described in Sections 10.3 and 10.4, trees located within ERP Site 7 and AOC J are protected and will be left in place, if possible**.**

13.2 Backfilling of Excavations

Materials for backfill will be satisfactory soil materials, free of: clay clods, rock, or gravel larger than 2 inches in any dimension; debris; waste; and other deleterious matter. The backfill material will be native material mined from the Hayward hills.

Due to the minimal depth of excavations in landscaped areas, compaction equipment shall consist of wheel rolling with the backfill equipment only. No other mechanical compaction equipment will be required.

Backfill materials will be placed in layers not more than 8 inches in loose depth. Before wheel-roll compaction, each layer of backfill material will be moistened or aerated, as necessary, to provide the optimum moisture content of the soil material and will then be wheel rolled with the backfill equipment. Backfill material will not be placed on surfaces that are muddy.

Backfill and fill materials adjacent to structures shall be brought up evenly around structures and shall be carried up to the existing elevations.

The finished surface of areas will be not more than 0.10 foot above or below the adjacent surface elevation.

After soil has been placed and lightly compacted, the top will be raked and hydro-seeded or seeded and mulched. Mulch will be spread over the seeded areas and watered.

All construction materials will be removed from the site and disposed of in a proper manner.

SECTION 14.0

FOREIGN OBJECT DAMAGE PLAN

Any debris on an aircraft movement surface has the potential to damage an aircraft. Examples of potential debris that could damage aircraft include tools, rags, trash, nuts, and bolts. This Foreign Object Damage Plan includes procedures to be used to prevent damage to aircraft and to avoid any obstruction to the aviation activities at the adjacent HEA. Due to the nature of remediation activities, location of the sites as they relate to the adjacent flight line, and institutional controls already in place, such as the perimeter fence, this Foreign Object Damage Plan has minimal requirements for this removal action.

The only debris that has the potential to become a foreign object would be the plastic sheeting that covers the soil stockpiles during excavation and sampling activities. All plastic sheeting will be secured with an appropriate weight, such as concrete blocks, or with hold-downs and ropes while unattended. At no time will plastic sheeting be allowed to lie on the ground either unattended or unsecured. It will be the responsibility of the ERM oversight personnel to ensure that the site is secure during all remedial activities.

SECTION 15.0

PUBLIC INVOLVEMENT AND REPORTING

15.1 Public Involvement

Notice of the availability of the Administrative Record was published on 4 August 2004. The Administrative Record was made available for public review at the Hayward Public Library. The documents constituting the Administrative Record for the subject sites are listed in Appendix B. Additional documents relating to the investigation and cleanup of other sites at the Hayward ANG, including technical reports, are available as part of the Information Repository at the Hayward Public Library.

As required by the *National Oil and Hazardous Substances Pollution Contingency Plan* (USEPA, 1990), the public is afforded an opportunity to review and comment on any proposed remedial action. A *Community Involvement Plan* (ERM, 2004c) has been prepared to establish the actions the ANG proposes to take in an effort to establish and maintain open and effective lines of communication with its Hayward neighbors and to actively seek public participation and involvement in the decision-making process associated with the ERP.

As part of the community involvement activities, the public will have an opportunity to review and comment on this document. Notice of the availability of the Draft-Final RAW and Notice of Exemption will be published in the local newspaper. The notice and a fact sheet announcing the 30-day public comment period will be sent out to the site-specific mailing list. The public comment period will last 30 days. Depending on community interest, a public meeting may also be scheduled during the public comment period. The comments received from the public during the 30-day comment period will be addressed and the response to those comments will be included in the Final RAW as an Appendix.

Prior to initiating the removal action, a notice of the remedial activities will be mailed to adjacent property owners.

Following completion of the removal action, a copy of the completion report, described below, will be placed in the Information Repository at the Hayward Public Library.

15.2 Reporting

Upon completion of the soil remediation activities outlined in this RAW, a completion report will be prepared describing the soil remediation project. This report will be placed in the Information Repository, and those who commented on the RAW will be notified of its availability and provided a copy of the response to comments. The report will document the following:

- Excavations that were completed to remove soils with COCs above remedial goals;
- Confirmation sampling results and figures provided to demonstrate final excavation limits and locations of confirmation samples;
- Volumes of soil that were excavated and the COCs that were present in the soil;
- The final characterization and disposition of all soil that was excavated;
- Any deviations from the RAW, including the reasons for the deviations; and
- Photographs, field notes, analytical reports, and all other information or data generated from this activity.

SECTION 16.0

REFERENCES

Air National Guard. 1998. *Final Air National Guard Installation Restoration Program (IRP) Investigation Protocol* (June 1998).

Department of Toxic Substances Control. 1998. *Removal Action Workplan Memorandum* (September 1998)

ERM. 2002. *Final Site Investigation Addendum Work Plan, Hayward Air National Guard Station, Hayward, California* (October 2002)

ERM. 2004a. *Final Site Investigation Addendum Report, Hayward Air National Guard Station, Hayward, California* (May 2004).

ERM. 2004b. *Health and Safety Plan, Hayward Air National Guard Station, Hayward, California* (November 2004).

ERM. 2004c. *Draft Community Involvement Plan, Hayward Air National Guard Station, Hayward, California* (November 2004).

San Francisco Regional Water Quality Control Board. 1994. *Residential or Farm Heating Oil Tanks*. Letter to San Francisco Bay Area Agencies Overseeing UST Cleanup (21 June 1994).

San Francisco Regional Water Quality Control Board. 1995. *Water Quality Control Plan for the San Francisco Bay Basin* (June 1995).

United States Environmental Protection Agency (USEPA). 1990. *National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule*. Federal Register, Vol. 55, No. 46. 40 CFR Part 300 (8 March 1990).

USEPA. 1993. *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA* (August 1993).

USEPA. 2004. *Region 9 PRGs Table 2004 Update* (20 October 2004).

APPENDIX A

SPILL PREVENTION PLAN

APPENDIX A

SPILL PREVENTION PLAN

This Spill Prevention Plan has been prepared to provide guidance during implementation of the remedial action. The purpose of this Spill Prevention Plan is to provide control and countermeasure methods necessary to contain a liquid release during remedial action services being performed at the Air National Guard Station, Hayward, California. This Plan will provide guidance to prevent the flow of unwanted liquids into navigable waterways and other locations on or off site during remediation.

Transformer Information

Transformers that are in the immediate vicinity of the remediation activities at the Hayward Air National Guard site are presented below. As part of the site remediation, the transformer located at AOC J will be tightly wrapped in two layers of 10-mil visqueen sheeting and secured with duct tape. The transformer will be loaded onto a truck using a forklift and hauled off-site for disposal.

Transformer Number	Type of Tank, Contents, and Use	Approximate Capacity (gallons)	Type of Secondary Containment
1	Possible PCB-containing transformer located at AOC J that transported from site.	20	None currently. The visqueen sheeting will provide secondary containment during transport.
2	Transformer that is located at AOC K is currently in use and will not be affected by remediation activities.	20	None

Heavy Equipment Operations

There is a slight possibility of an accidental release of either diesel fuel or hydraulic oil from the excavation and/or backfill equipment operating during remediation activities. Care will be taken while operating, servicing, and fueling all equipment. No equipment will be fueled, serviced, or maintenance performed over soil at the site. All equipment will be thoroughly inspected daily prior to usage. There are several existing concrete pads at the site where these operations can more safely be performed.

Prevention, Control, and Countermeasures

This section presents the prevention, control, and countermeasure means and methods that will be in place on site that reduce the likelihood of a release into navigable waters of the United States.

The same methods of placement of straw wattles, plastic sheeting, and/or straw bales will be used to surround areas where a release may occur, such as the two existing storm drain inlets, and West Winton Avenue. Control measures for on-site facilities are identified in Figure A-1.

Both transformers are mounted on concrete equipment pads and surrounded by chain link fencing. Possible leaks from the equipment would be readily visible on the concrete hold-down slab. In addition to the aforementioned containment methods, fuel and water absorbents will be on site and available in the event of a spill. If a spill occurs and absorbents are used, they will be characterized through chemical analysis and disposed of properly.

All work completed on site will be performed during normal business hours. The project manager, or their assistant, will check the status of all excavation activities and spill prevention control measures on a daily basis. These inspections will be documented in the daily report.

If a deficiency is identified, the project manager will make the appropriate corrections, as required. The project manager will be able to implement immediate corrective actions by utilizing appropriate resources. If a spill is evident, the project manager will also have the necessary resources to implement corrective actions, as needed.

Project No. 7505.31
Date: 07/29/04
Drawn By: R. Olson
CAD File: G:\7504\31\75043103.dwg

LEGEND

- 14 — Building
- Station Boundary
- Storm Drain Line/Catch Basin
- Sanitary Sewer Drain Line
- Surface Water Flow Direction
- Approximate Location of Former Transformer
- AOC N — Area of Concern
- ERP Site Boundary

N

0 150

Approx. Scale (feet)

Figure A-1

Soil Stockpile Locations and Storm Drain Protection
Hayward ANGS
Hayward, California

ERM 07/04

Response to Spill

If a spill event of potentially impacted water or liquid were to occur, the following will be contacted:

EMERGENCY CONTACT TELEPHONE NUMBERS

Local (Emergency): Hayward Police, Fire Department, and HAZMAT	911

Federal Agencies

National Response Center (NRC)[1]:	(800) 424-8802
USEPA Region IX (if NRC is not reachable):	(800) 300-2193

State Agencies

California Office of Emergency Services[2]:	(800) 852–7550
Regional Water Quality Control Board:	(510) 622-2300
After hours:	(800) 852-7550

Local Agencies

Alameda County Environmental Health Department	(510) 567-6700

Air National Guard

162 CCGP, Lt. Col. Doris Gruber	(916) 565-2267

1. Call for spills greater than 42 gallons
2. Call for significant releases or threatened release of hazardous materials

APPENDIX B

ADMINISTRATIVE RECORD

Appendix B

Administrative Record
Hayward Air National Guard Station
Hayward, California

Doc. No.	Author	Document	Publication Date
1	Science and Technology, Inc	Preliminary Assessment, 216th Engineering Installation Squadron and 234th Combat Communications Squadron	Jan-91
2	CDM Federal Programs Corp.	Defense Environmental Restoration Program, Formerly Used Defense Sites, Inventory Project Report, Hayward Army Airfield, Alameda County, CA, Site No. J09CA082700	Feb-91
3	USACE	Defense Environmental Restoration Program, Inventory Project Report, Hayward Army Airfield, Alameda County, CA Site No. J09CA082700	Aug-94
4	DTSC	DTSC Designated Lead Agency (Letter)	3-Jan-95
5	DTSC	Review of Health and Safety Plan in Draft PA/SI Workplan (Memo)	7-Feb-00
6	DTSC	Review of Draft PA/SI Workplan (Memo)	16-Feb-00
7	DTSC	Comments on Draft PA/SI Workplan (Memo)	28-Feb-00
8	DTSC	Comments on Draft PA/SI Workplan (Letter)	17-Mar-00
9	ANG/CEVR	Letter in Response to DTSC Comments On Draft PA/SI Workplan	14-Apr-00
10	ERM	Preliminary Assessment/Site Investigation Work Plan	Jul-00
11	ANG DAF	Remedial Project Manager Appointment December 2000	8-Dec-00
12	ERM	Minutes of Teleconference/Meeting	22-Dec-00
13	DTSC	Comments on Draft PA/SI Report (Letter)	5-Mar-01
14	CAANG	Solid Waste Management Plan	8-Mar-01
15	ERM	Response to Comments On Draft PA/SI Investigation Report	17-Apr-01
16	ERM	Draft-Final No Further Response Action Planned Decision Document	May-01
17	RWQCB	Comments on the Draft Final No Further Response Action Planned Decision Document	10-Sep-01
18	RWQCB	RWQCB Inputs on HANG Responses to Board Comments	15-Jan-02
19	ERM	Final Preliminary Assessment/Site Investigation Report	Jan-02
20	AMEC	Storm Water Pollution Prevention Plan	May-02
21	AMEC	Oil and Hazardous Substances Spill Prevention and Response Plan	May-02
22	DTSC	DTSC Comments On Draft SI Addendum Workplan	8-Aug-02
23	RWQCB	RWQCB Comments on Draft SI Addendum Workplan	8-Aug-02
24	ECATS	Final Hazardous Waste Management Plan	Sep-02
25	ERM	Final Compliance Site Inventory and Compliance Assurance and Pollution Prevention Management Action Plan	Sep-02

Appendix B

Administrative Record
Hayward Air National Guard Station
Hayward, California

Doc. No.	Author	Document	Publication Date
26	ERM	Response to DTSC Comments On Draft SI Addendum Work Plan	25-Sep-02
27	ERM	Response to RWQCB Comments On Draft SI Addendum Work Plan	25-Sep-02
28	ERM	Final Site Investigation Addendum Work Plan	Oct-02
29	RWQCB	Board Staff Responses to HANG Communication on Draft SI Addendum Workplan	10-Oct-02
30	RWQCB	Request for a Technical Report on Emergent Chemicals, Sources and Sampling, HANG	3-Jul-03
31	RWQCB	RWQCB Comments On Draft SI Addendum Report	21-Nov-03
32	DTSC	DTSC Comments On Draft SI Addendum Report	5-Dec-03
33	ERM	Final Environmental Baseline Survey	Mar-04
34	ERM	Minutes of Meeting 19 February 2004, Site Investigation Addendum Report	4-Mar-04
35	ERM	Response to Comments On Final SI Addendum Report	18-Mar-04
36	ERM	Letter to DTSC and RWQCB Response to Comm. Regarding Draft Site Investigation Addendum Report	18-Mar-04
37	ANG	Correspondence Regarding Code of Federal Regulations	22-Mar-04
38	ANG	Public Participation Legal Review of Requirements by NGBJ	25-Mar-04
39	DTSC	Comments on Draft SI Addendum (Letter)	30-Mar-04
40	ERM	Final Site Investigation Addendum Report	May-04
41	DTSC	Comments on Final Site Investigation Addendum Report and the Environmental Baseline Survey	17-Sep-04

Abbreviations

AMEC = AMEC Earth and Environmental
ANG = Air National Guard
ANG DAF = Air National Guard, Department of the Air Force
ANG/CEVR = Air National Guard/Installation Restoration Program Branch
CAANG = California Air National Guard
DTSC = Department of Toxic Substances Control
ECATS = Environmental Consulting and Training Services
ERM = Environmental Resources Management
HANG = Hayward Air National Guard Station
RWQCB = Regional Water Quality Control Board
SI = Site Investigation
USACE = United States Army Corps of Engineers

APPENDIX C

DQA LETTER DATED 29 JANUARY 2004

POST OFFICE BOX 487 • FREMONT, CA 94537 • TELEPHONE (510) 793-8861 • FAX (510) 793-8868

1/29/2004

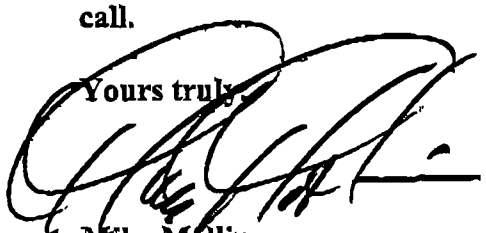
Mr. Mark Andrews
ERM Construction Co.
Fax 916 920-9378

Re. Hayward Air National Guard

Dear Mark:

The material produced at our LaVista facility is a native material that comes from the mission hills in Hayward. We add ½ % lime to the material to give it stability and increase its ability to compact. If you need any further information give us a call.

Yours truly,



Mike Mallin